# Telephony.

THE AMERICAN TELEPHONE JOURNAL

**Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves**
**PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY**
**MONADNOCK BLOCK, CHICAGO**

H. B. McMEAL, PRESIDENT AND EDITOR
J. R. HASTIE, Advertising Manager
H. D. FARGO, SECRETARY AND TREASURER
S. R. EDWARDS, TECHNICAL EDITOR
W. E. RAYMOND, Subscription Manager

Entered as second-class matter September 4, 1908, at the post office at Chicago, Ill., under act of March 3, 1897

Volume 67
Number 7

CHICAGO, SATURDAY, AUGUST 15, 1914

Subscription—10 Cents a Copy
$3 a Year U. S., Cuba and Mexico
$4 Canada, $5 Other Countries


### THE WORLD'S GREAT RACE.

**Business is but a means to an end. It is but the occupation by which you are to exercise and develop your God-given qualifications and talents. It is the arena in which you are to practice, day in and day out, for the great race of the world—the successful life.**—Walter H. Cottingham.

### The Maintenance of Toll Lines.

The maintenance of toll and long distance lines involves many points which should receive attention. Often some of them are neglected, especially when the employe does not appreciate the effect on traffic arrangements, of trouble on the lines. In addition to changes in the routing of calls, necessitated by trouble, with the accompanying slowing up of service and usually poorer transmission, there is also a revenue loss on the part both of the public and the company which may be more or less serious. It is therefore important that the toll lines should be well maintained and repairs quickly and permanently made. While a good man can usually work with poor tools, he cannot work efficiently. This applies to the testing and maintenance men who should be provided with high grade apparatus, in order to assure efficiency in their work.

Records are also an important feature for efficient work in the testing department. It is quite necessary that they should be kept right up to date and all changes and additions to lines promptly and properly posted.

The practical man has learned from experience that in his work a thorough knowledge of his testing apparatus is necessary; that he must know his lines and the men who work under his direction; and that he must be able to adapt himself to various working conditions.

In the location and clearing of trouble on toll lines, points arise which often puzzle and cause the tester considerable difficulty. Mr. Cavers in his article, "Long Distance Telephone Line Testing and Maintenance," which appears on other pages of this issue, presents information relating to such work which the practical man will find of value in his every day work.

### The Operator and Line Tests.

The supervisor in an operating room has many duties which require constant and undivided attention. Primarily it is her duty to see that the operators do their work in the manner which has been decided upon, as a result of careful investigation, as the best for each operation. One of the matters which come under the direction of the supervisors is that of correct testing of lines by the operators.

The supervisor, of course, knows the trouble and difficulties which false reports due to incorrect or careless testing may cause. So does the operator but often one gets careless or forgets. It is then that the supervisor should call attention to the proper method of holding the plug and making the test.

In testing, the plug should be held firmly between the thumb, first and second fingers. The plug should be held in a slanting position, the angle for the best results depending upon the position of the multiple jack of the line with which connection is desired. The tip only of the plug should be used in making the test and it should make contact only with the rim or thimble of the jack. If the operator is careless and permits the entire end of the plug to enter the jack a correct test is not obtained and a false report is likely to be given the calling subscriber.

It is easy to give an incorrect report by failure to properly distinguish the different tones. If the plug tip is allowed to rest a moment on the jack thimble after a second tap has been made and the click heard, the operator may be quite certain of getting the accurate test.

# The Wings of Will

## By HERBERT KAUFMAN

Your wage is a just measure of your worth. The world has been buying commonplace muscles and minds for so long that society is today an accurate judge of ability. Service is a standard commodity with a stable value.

Your own opinion of your qualifications is apt to be a biased estimate. You are quite likely to confuse your need with your meed.

Conceit is an outrageous flatterer and a bit of a liar to boot.

Vanity insists that you are a busheled light, but if you were a hidden luminary, somebody would be bound to note your obscured brilliance. Your discontent is commendable, though misguided.

No man of force and character wishes to remain in a place below his attainments. Aspiration is the very ferment of success. But you devote yourself to criticising circumstances which concentrated effort would conquer.

No degree of latent efficiency can benefit you—talent requires application.

You possibly belong to a well-defined class of maladroits, who persistently overestimate the mere possession of knowledge and futilly pass through life thinking that information is the equivalent of action.

There are men who zealously collect keys to all sorts of subjects and situations, and never think to fit them to practical undertakings.

Nature has a trick of endowing folks with first-rate brains, and then neglects to supply the corollary backbone.

Wisdom is wasted on a wabbler. Tenacity is an indispensable complement to wit. Opportunity is not a Diogenes. She doesn't roam about searching out individuals. Her lantern shows where fortune may be won by those sufficiently alert and enduring to contest for supremacy.

Civilization has refined, but cannot reduce, the rigors of the struggle for existence.

From savagery upward we have advanced through unrelenting competition. The elimination of the puny enables us to recognize our rightful leaders.

Physical prowess may no longer indicate worth, but strength will ever be essential to mastery. It takes more than intellect to create generals. Tactical genius must be abetted by courage. Those who dare farthest, fare farthest.

History can only be molded by men of ideas and ideals. The projects of Alexander, Caesar, Nelson and Wellington were not necessarily unique conceptions.

Myriads of their predecessors and contemporaries were probably competent to contemplate the same campaigns, but died unknown because their resolution did not equal their judgment.

Many can—few do. Some trust to luck—some rely upon influence—some expect promotion without self-assertion—but the persevering rise upon the wings of will.

When you despise your job, it is high time to despise yourself.

Copyright, and published by permission, Chicago Tribune.

# Long Distance Telephone Line Testing and Maintenance

## Hints for the Practical Man Regarding Toll Line Work—Records and Their Uses—Location of Testing Points—Test for Opens—Locating Grounds and Short Circuits—Information Adapted for Use of Tester and Troubleman

By James Cavers

Those arteries of long haul traffic, the toll or long distance lines, have to be kept in a state of high efficiency in order that their earning power may not be impaired, their talking limits shortened; and to insure, as far as possible, that no preventable trouble may affect their proper working.

There are different grades of lines, some of light wire serving nearby towns or villages, some of heavier material for use between more distant points. Other lines are of heavy copper designed for the long haul traffic. The latter type is loaded and gives way only to the loaded phantom, the line de luxe and the highest in transmission efficiency.

Jacksonville to Thomasville — LINE NO. 100

| FROM | RING | TERMINAL, TEST, LOOPED OR BRIDGED | TO | MILES | GAGE & KIND |
|---|---|---|---|---|---|
| Jacksonville | 1 | T | Algiers | 10 | No 9 B.B. Copper |
| Algiers | 2 | L | Wilston | 20 | " " " |
| Wilston | | First | Norton | 5 | " " " |
| Norton | 3 | B | Thomasville | 7 | " " " |
| Thomasville | 4 | T | | | |
| | | | | 42 | |
| Cable: At Jacksonville | | | 200 feet 16 B.S. gage | | |
| " Algiers | | | 100 " " " " | on each side of office | |
| " Norton | | | 300 " " " " | " " " | |

Fig. 1. Form of Toll Line Record for Testing Force.

Any trouble on a long distance line may seriously affect the traffic arrangements, as it is then necessary to route the calls over some other line, such a line probably being of lower transmission value, of a longer length, and already carrying enough traffic. The case is worse when there is only one line serving two points, traffic over it being necessarily suspended until repairs are carried out. The revenue loss has also to be considered, both from the customer's and the company's point of view, and it therefore follows that quick and permanent repairs are necessary in dealing with defects in such lines.

It is desirable that the men employed in testing work on long distance lines be specially trained, as the work calls for a high degree of accuracy and sound judgment. The equipment for their use should be of a high standard, as it is not possible to get efficiency with a poor grade of apparatus.

Records play an important part in the efficiency of the testing force and they should always be kept up to date. Too many men are careless in the proper posting of changes and additions, and the service suffers as a result.

The line records should cover the following points: Length and kind of wire between each test and service station, whether cut in for service or test; and where for service, whether looped or bridged; the length and gage of cable on each side of the offices, and the ring signal for each point. This information can be conveniently shown in loose leaf or card form, a record along those lines being illustrated in Fig. 1.

The pin positions of the lines on the various leads, and at various points thereon, should be recorded, copies being kept by the wire chiefs and the men in charge of districts. In this case a card record will be found convenient, an example being shown in Fig. 2-*A*.

In tables of wire data the resistance is given as at a standard temperature, but it is necessary, in making measurements, to allow for changes in resistance due to variation from the standard. For instance, if a certain line has a resistance of 5.17 ohms per mile at 60 deg. Fahr., the resistance at 5 deg. Fahr. will be about 4.58 ohms per mile. On such a line, 100 miles long, the change of resistance due to temperature would amount to 59 ohms, and, unless allowance be made, locations given to the troublemen would be incorrect.

It is a good plan to make up a table showing the resistance per single mile for each kind of wire used and between the ranges of temperature commonly experienced in the district dealt with. Wire chiefs should have, as part of their equipment, a thermometer, which should be placed outside in a readable position, so that reference can be made to it when desired. In cases where the temperature is not known, the resistance of a known length of open wire can be measured and the resistance per mile obtained by dividing the resultant of the test by the length of line in miles.

There are, as previously mentioned, different classes of toll or long distance lines, some being much more important than others, due, mainly, to their length, transmission efficiency and the territory which they have to serve. When a trouble occurs on lines of the latter class, it becomes necessary to patch the faulty portion, using a less important line for the purpose. The patching is done by cutting in the good line and cutting out the bad portion by means of plugs and cords inserted in the test panel jacks at the stations nearest to the point in trouble. Judgment must, of course, be used in matters of this kind so that the traffic requirements are met as fully as possible. Except in isolated cases, it is usually practicable to keep the important lines working all the time.

The location of testing points requires careful consideration. They should be placed at convenient points and so located as to make a flexible system whereby proper patching of the important lines may be carried out and the testing of lines facilitated. It is desirable that the length of the lines be not appreciably added to. Generally speaking, testing points should not be favorably considered where any considerable wire mileage would be required. If care is taken in wiring and the length of open wire not appreciably added to, no serious transmission loss will accrue, due to a small number of testing points on a long toll line.

It should be borne in mind that, due to testing points, the likelihood of lightning trouble is increased. This has to be taken into consideration in designing a system, as it is no uncommon thing for all the lines passing through a testing point to be temporarily out of business on account of blown fuses and carbon grounds.

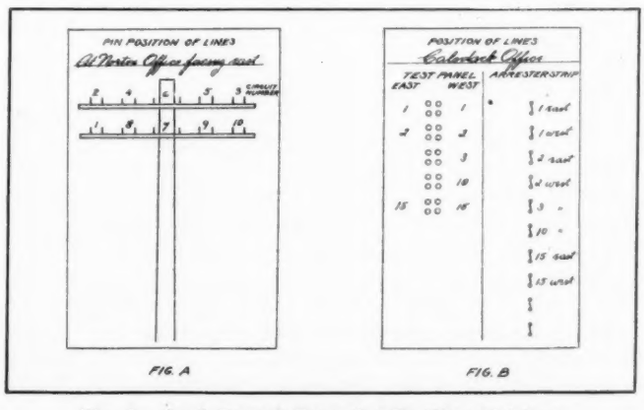



Fig. 2. Card Record Form for Position of Lines.

A record of the position of the lines on the test panel and arrester strip should be hung or pasted up in a convenient position in each office, so that testing may be facilitated and the changing of fuses or cleaning of carbons be properly carried out when found necessary. A duplicate of the record referred to should be kept by the wire chief in order that he

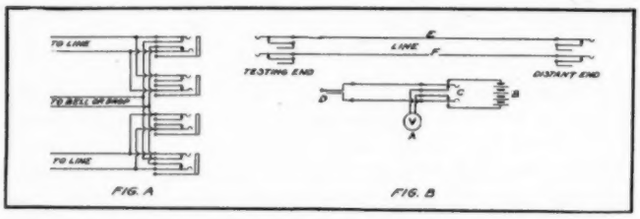



**Fig. 3. Station Connections—Connections for Locating Opens.**

may instruct an operator or anyone not well informed as to the layout of the apparatus and its proper working. It is important that the operator or agent at small offices be instructed in the method of cleaning carbons and changing fuses. After a lightning storm, much delay may occur if a man has to be sent especially to do the work and expense may be saved if the employe on the spot is able to carry out repairs. Each testing point should be furnished with plugs and cords for cutting through, opening, short circuiting or patching lines, and a supply of spare fuses and protector micas should always be on hand.

A form record for showing the location of the lines is shown in Fig. 2-*B*.

A looped station is one at which the circuit may be cut. Either side may be used as desired, the signal being so wired that it is connected to the side not in use and bridged across the circuit when the station is idle. There are usually two listening jacks, one for each side of the line, so that the operator can monitor when desired. Circuit connections for this type of office is shown in Fig. 3-*A*.

A bridged station, as the name implies, is one which is always connected across the line, the operator not being able to cut the circuit. If all the stations on a line are bridged, there can only be intercommunication between two at one time, and only one station can use the line when connection is made to another circuit.

The location of opens on telephone lines presents difficulties not met with when making measurements for grounds, crosses or shorts. The usual bridge measurement for opens, while satisfactory in dealing with cables, does not work out well on open lines. It is, therefore, in many places the general practice, when a break occurs, to merely locate as between the two stations involved, then to have line examined in that section. This method of procedure is, at times, necessarily expensive and the delays cause serious inconvenience.

Opens can be located with fair accuracy if the conditions are favorable for the test hereunder described.

The connections for an open test are shown in Fig. 3-*B*, where *A* is a voltmeter of a wire chief's type, *B*, a battery of about 100 volts, *C*, a key, *D*, a connecting plug, and *E*, a faulty line with an open at point *F*. The test consists of measuring the capacity of the good side of the line, then the bad side to the clear break, and from the readings obtained, calculating the distance to the trouble. Referring to Fig. 3-*B*, assume that a test is being made on the line shown. The line is first opened up at the distant end. One testing plug is connected to ground and the other to the good wire. The key, *C*, is depressed, thus sending battery out on the line. For about 10 seconds the key is kept depressed and is then released. The line then discharges through the voltmeter, the reading thereon being noted.

This operation is repeated a number of times so as to get a good average.

The same procedure is adopted in testing over the bad wire. Assume that the line is 50 miles long, the deflection on the good wire 30 divisions, on the bad wire 12 divisions, then the distance to the trouble from the testing end will be 50:x as 30 :12 = 20 miles, it being assumed that the capacity is uniform throughout.

This method will be found quite satisfactory so long as the lines tested are of average length, the error due to inequality becoming larger as the length tested is longer. Good locations have been obtained by this test on lines about 100 miles long.

In certain cases the broken end of the bad wire will be lying on the ground on the side next to the testing point. When this is so, a reading should first be taken on the good wire, the line then short circuited at the distant end, and another reading taken over the good wire. If in this case the first reading were 30 and the second 50, it follows that the measurement on the bad wire from the distant end is 20 divisions. The calculation is then made in the usual way, but the resultant will be the distance to the trouble from the distant end. This method is not quite so accurate as the one first described, but, with not too long lines, fair locations can be obtained. Should it be found necessary, any other good wire of the same gage on the some route could be used between the testing points.

In making open tests of the nature referred to, it is necessary that the insulation resistance of the wires be high, any appreciable leakage making the test inoperative. Cases will arise where, due to this, an open test cannot be made, but an approximate location may still be obtained by other means. For instance, if, on an open line, a short circuit be placed at the distant end, the noise adherent to such trouble will be considerably cut down if the open is close to the short circuited point. Further, if the insulation loss be the same throughout the length under test, the amount of leakage, measured on a voltmeter, will be an indication of the distance to the trouble. It is possible also, by ringing over a broken wire whose insulation is high and with a polarized bell in series, to tell approximately by the amount of actuation of the bell hammer the distance to the break. The further the break from the tester, the louder will the ring become.

The voltage of the battery to be used in connection with the testing circuit described will depend upon the sensibility of the voltmeter and the length of line to be tested. About 100 volts will suffice for a voltmeter with a 40-volt scale. It is advisable to so arrange the voltage that a deflection of one scale division will be equivalent to about two or three miles of line.

It is desirable that insulation tests be made periodically on important toll lines. The tests can be satisfactorily carried out with a reflecting galvanometer and the necessary auxiliary apparatus used in insulating testing. It is a good plan to tabulate the results so that they may be compared with tests made at various times and in different kinds of weather.

Trees are a prolific source of insulation trouble and should

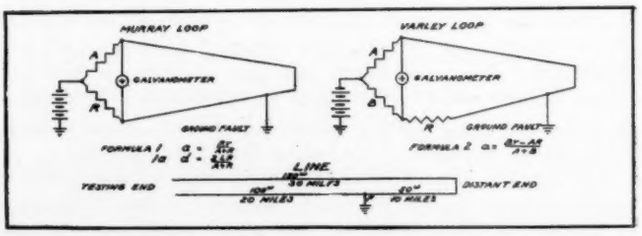



**Fig. 4. Resistance Measurements and Formulas.**

always be trimmed so as to clear the wires by a few feet. Broken insulators, wires lying on arms and worn bridle wire covering are also responsible for insulation loss, the effect being specially noticeable in wet or damp weather.

Protector carbons should receive attention after static or lightning storms, as when on a voltmeter test no leakage to

ground is shown, a test with a sensitive galvanometer will frequently indicate considerable loss due to dust particles between the carbon blocks.

Measurements of resistance, or distance to grounds or crosses, are made by either the Murray or Varley loop methods. In each case the conductor resistance is first measured. This, starting from the testing end, is the resistance over one wire to the distant end and back over the other to the testing point. In the Murray arrangement, the loop is divided into two parts by the fault. These two parts are two arms of the Wheatstone bridge, the other two arms of which are made up in the testing apparatus.

The Varley test differs from the Murray, in that a portion of the loop is made up of resistance in the testing set. Fig. 4 shows the two arrangements with formulas applicable to each; also a circuit with a ground fault at point $F$. In the case illustrated and applying the Murray method, the two wires after being short circuited at the distant end, are attached to the bridge posts. The conductor resistance is measured, then the connections are altered to suit the Murray arrangement and the rheostat resistance varied until a balance is obtained. Then, from formula No. 1 (Fig. 4) the resistance to the trouble is as follows:

$A = \dfrac{R \times r}{A + R}$ where $r$ = conductor resistance; $a$ = resistance to the trouble; $A$ = resistance plugged in bridge arm $A$; and $R$ = resistance plugged in rheostat.

If $L$ = length of one side of the line and assuming that the composition is the same throughout, the distance to the fault may be obtained from the formula,

$$\text{distance} = \frac{2LR}{A+R}.$$

Assume one side of the line shown in Fig. 5-$A$ is 30 miles long; that the conductor resistance 300 ohms; the resistance plugged in the rheostat 500 ohms and in the $A$ arm 1,000 ohms. Then, from formula 1, Fig. 4,

$$a = \frac{500 \times 300}{1{,}000 + 500} = 100 \text{ ohms from the testing end.}$$

The distance to the trouble, from formula 1$a$, is

$$\frac{2 \times 30 \times 500}{1{,}000 + 500} = 20 \text{ miles.}$$

The Varley test, applied to the line, Fig. 5-$A$, gives the following results:

$$\text{From formula 2, Fig. 4, } a = \frac{Br - AR}{A+B}.$$

Where $r$ conductor resistance; $a$ resistance to trouble; $A$ resistance plugged in arm $A$; $B$ resistance plugged in arm $B$; and $R$ resistance plugged in rheostat.

Then, when $r = 1{,}387.5$, $A = 1{,}000$, $B = 1{,}000$ and $R = 809$,

$$A = \frac{(1{,}000 \times 1{,}387.5) - (1{,}000 \times 809)}{2{,}000} = 289.25 \text{ ohms from the testing end.}$$

It is advisable that a check test be invariably taken, in order to confirm the correctness of the measurement as, if there be two faults on the line under test, the two measurements will not balance, the second trouble being thereby brought to the notice of the tester.

It is difficult to get a good measurement on bridged lines unless arranged so that the stations can be cut off by the insertion of a plug or plugs at the respective intermediate points. This arrangement is not usually made and the tester has therefore to make the best of a hard proposition. Agents or operators can frequently be educated to help the tester by opening or short circuiting the lines.

Where a ground or cross is involved, the line is usually noisy and a short circuit, put on at any point near the trouble, will cause the line to become quiet, thus giving an indication of the location of the fault. If the tester knows that the trouble is between his station and the first station he can, by applying the ordinary Varley test, get a correct measurement, the bridged stations not affecting the result except when the ground or cross is beyond the first bridged point. A low

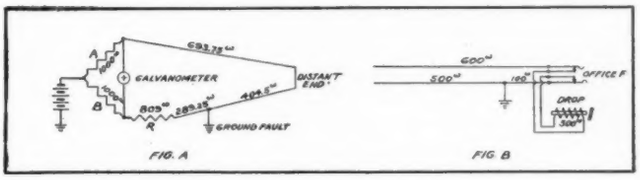



**Fig. 5. Practical Applications of Trouble Locating Methods.**

resistance short circuit on a bridged line with few stations is easily located, the bridged bells in this case not making much difference. Where the line is a long one and the short circuit is near the distant end, some of the stations near the tester can usually be rung and an approximate location thus obtained.

In dealing with small offices, it is at times difficult to get a short circuit put on due to plugs being lost or to an inexperienced operator. Where such is the case and where only one distant office is connected, there need be no difficulty in making a measurement for a ground trouble if the operator is instructed to keep off the line during the time of test, the bell or drop not affecting the result if an ordinary Varley test is made.

Consider Fig. 5-$B$ where $F$ is an office located at the distant end of a line, a drop of 500 ohms resistance being in the circuit. Assume that this cannot be cut out and that a Varley test be proceeded with. Then, if the ground is located 500 ohms from the testing end, the conductor resistance 1,700 ohms including drop, the resistance plugged in the $A$ and $B$ arms 1,000 ohms respectively, the resistance to be plugged in the rheostat to effect a balance will be 700 ohms and applying formula 2 we have

$$a = \frac{(1{,}000 \times 1{,}700) - (1{,}000 \times 700)}{1{,}000 + 1{,}000} = 500 \text{ ohms from the testing end.}$$

An arrangement of this nature is of great use for it is possible to use as the good side of a loop, a wire of a different gage or length from the bad wire.

Crosses are dealt with in practically the same way as grounds insofar as the actual tests are concerned. But where the line crossed with is not grounded, it is necessary when making a Murray or Varley measurement, to connect that line to the ground post of the bridge, or ground the line itself. This is required to complete the circuit for the grounded battery used in the tests referred to.

What is known as the back Varley test is extremely useful in toll line testing. In the application of this test the bridge connections are arranged as for a Varley loop test and the bridge arms made equal. Then, when a balance is obtained by plugging resistance in the rheostat, the resistance to the trouble from the *distant end* is equal to $\frac{R}{2}$, where $R$ is the resistance plugged in the rheostat. As an example, take the line shown in Fig. 6-$A$, where a ground trouble is located at a point 5 ohms from the distant end. With the bridge arms equal, it will be necessary to have 10 ohms in the rheostat to effect a balance. Then, from the formula given the resistance to the trouble from the distance end is $\frac{10}{2} = 5$ ohms.

In the test referred to, it is not necessary to take the conductor resistance and rapid work can be accomplished. Frequently in practice it is found that in cases of grounds, a short

circuit put on at the distant end makes the line normally quiet. When this is so, the indications are that the trouble is right in the distant office or close to it and a back Varley test quickly makes certain.

In making measurements for short circuit troubles, it is only necessary, where there is no appreciable resistance in the

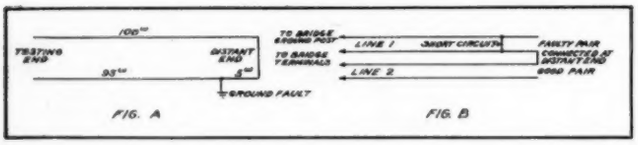



**Fig. 6. Back Varley Test—Testing for a Swinging Cross.**

fault itself, to proceed in the same manner as in making a conductor resistance measurement.

Where the trouble is a swinging one or of high resistance more careful tests must be made to get a good location. It is necessary, when there is resistance in the short, to measure as for a cross, using as the third wire a leg of another available line as shown in Fig. 6-*B*.

A third wire is not always available and, if the trouble is not swinging too badly, it is frequently possible by increasing the testing battery or by having ringing current sent over the line from the distant end during the whole period of measurement, to get a good location. Care should be taken, in the latter case, to listen on the line for the ringing current as, if any appreciable amount passes the short circuit, the galvanometer of the testing instrument will be affected.

In dealing with swinging short circuits, the tester should endeavor to gradually vary the resistance plugged in the rheostat until, when the trouble swings on, the galvanometer needle remains fairly steady.

When the troubleman arrives near the point of the measured location on a short circuit trouble, he should, if the fault not already discovered, call the tester and place a short circuit on the faulty pair. The conductor resistance is then measured, compared with the measurement to the trouble, and the distance from the troubleman to the fault worked out. In case the troubleman is on the distant side of the fault, no alteration in the resistance of the circuit would be indicated by the testing instrument and the troubleman would accordingly be instructed to come towards the testing point. Should there be another pair of wires of the same gage available, a short circuit could be placed across them and a measurement taken; this would then be compared with the measured location and the distance worked out. For instance, if, in such a case, the resistance to the trouble were 50 ohms and the resistance on the other measured pair, 60 ohms, the troubleman would have to come forward a distance equivalent to 5 ohms of single wire resistance.

When the short circuit is a swinging one, another short circuit placed on the side nearest the tester, will make the reading on the measuring instrument a steady one while, if the short circuit is placed beyond the trouble, except within a very short distance, the galvanometer needle will oscillate intermittently.

Troubles should invariably be measured before sending men out after them. It saves time, as if the man knows where to go, he can frequently take a shorter road than by way of the lead and he does not have to give close attention to the wires until he gets near the point of trouble.

Instructions to troublemen should be definite and the tester should closely follow up his work. Success largely depends upon this.

Noises on lines are sometimes due to one side being crossed with a dead wire in the same cable through which the line passes. The effect is such that on opening up at the distant cable box, the open wire, listened on there, is quiet. The cable pair itself will not show any appreciable disturbance, the noise only coming on when the cable and line are connected together.

Unless a test is made at the end of the cable before proceeding further with the location of such troubles, much time may be wasted. Ordinarily, noisy lines are tested for location by putting on a short circuit at various points and a man, starting out from the testing end, would short circuit the line some distance out. Then, if line tested quiet, the troubleman would proceed some distance further and have the test made.

With a trouble of the nature referred to, a short circuit put on at the cable box would cause the line to become quiet. The noise would not become very noticeable until a fairly large amount of open wire is included in the circuit between the tester and the short circuited point. Where apparatus for capacity testing is available and each side of the line is tested separately for capacity to an open at the cable box, any appreciable inequality between the two wires will indicate that a cross exists and the cable pair should be changed.

In testing for noises on lines with a number of looped stations, the tester should first call a point about the middle of the line and ascertain if the noise is between him and that station. He should then proceed to call the other points in the direction of the trouble until the noisy section is located. A short circuit then placed at the end of that section will, if the line becomes quiet, indicate that the trouble is close to the short circuited point.

When the two wires forming a circuit are not properly balanced, the conductor resistance of each side not being the same, inaccurate results will be obtained when measurements are made over them. It is frequently found in practice that a line is out of balance to the extent of about 10 or 15 ohms. While this is not enough to make it noisy, difficulty will accrue in dealing with trouble. If for instance, a man out on a line asks for a measurement to the point where he is calling, any inequality between him and the tester, will cause the measurement to be inaccurate and therefore delay the clearing of trouble. In some cases the measurement will indicate that the trouble is on the side nearest the tester while it is actually beyond.

Unbalanced lines are usually due to poorly soldered or loose connections in offices or cable boxes, also to weak springs in test or switchboard jacks. To test a line for equality, it should be short circuited and grounded at the distant end and a Varley loop measurement taken, using each side of the line in turn as the bad wire and working out the resistance to the ground for each case.

Tests on lines not connected direct to the testing point are readily arranged for by connecting the lines at the test panels in the different offices and cutting the intermediate looped stations out by means of the cords and plugs usually supplied for that purpose. A tester can usually, by thus combining circuits, reach any point in his district, thus facilitating, as far as possible, the quick clearance of trouble. Where the only circuits available are a phantom and its two side circuits, the phantom, if connected by the repeating coil method, can be used for the testing line without affecting the side circuits in any way.

The writer has endeavored to adapt the information given in this article to the work of the practical man. To attain success the tester must have a thorough knowledge of his testing apparatus, be able to adapt himself to the various working conditions, get to know his lines, and the men working for him. He must be able to make quick and proper decisions, and be prepared for any emergencies that may arise from time to time.

### Another Warlike Ultimatum.

The women operators at the Dorchester telephone exchange in Boston have served notice on the management of the exchange to get rid of the mice in the building or they'll strike.

# Moratoria

## A War Measure, Also One of Peace

By J. C. Kelsey

Moratoria is really a disease. You will have a hard time to find it in the dictionary, unless you have one of the very latest. It means a place or situation of delay—something like sanatorium, or place of health. But you really know something about it.

In your life you have loaned people something, or you have sold them something. But they insist upon postponement of the payment of the debt.

In our country we ordinarily class the man who does this chronically, as a deadbeat. He is listed with the various grocery credit associations, and even the laundry knows him. But the name "dead-beat" is too harsh. The man is practicing moratoria. He has formally, although permanently, postponed the payment of his debts.

---

When the crash of war resounded throughout the world, there suddenly was an alignment of two classes, debtor and creditor. In Europe, they proclaimed a moratorium. England and France resorted to it. Russia went further and has extended the moratorium for an additional 60 days. Even China, so many miles away, found it necessary to postpone the payment of all notes and similar debts.

And in the United States, free from war and its penalties, did they proclaim moratoria? Yes! But they have done it in another way. They simply modified existing obligations but not by proclamation. They closed the New York Stock Exchange and, of course, the other American exchanges quickly followed suit.

America simply followed suit under another name.

---

Europe sold American stocks to the tune of $150,000,000. No one is absolutely sure who the buyers are, but everyone is wondering how the bill will be paid. The bill cannot be paid in gold because it is contrary to our interest as a nation to let the gold go.

We have nothing to trade because we have no ship owners willing to take the risk, nor shippers willing to pay the insurance.

Hence a moratorium—the only practical way out—a postponement of payment of the debt. It is something which is practiced in every man's life. Creditors must wait until the debtor finds it convenient.

When you need the doctor, you do not hesitate to call him because you can't pay him at the time of the call—neither can the doctor make you pay. The obligation is entered into on an emergency basis, just as a doctor spends hours in trying to restore a drowned man on the beach. He asks no questions; he merely tries to save a life.

The patient when saved slinks off into the crowd or is taken home, and the doctor finds that a moratorium has been proclaimed.

---

Obligations are entered into subject to the conditions of the present. Europe bought our stocks on a peace basis and tried to sell them on a war basis. Little did Europe care how much harm it dealt to Americans who held those stocks.

America, as other nations not at war, has reasons enough not to be ashamed of her moratorium. It naturally must make terms which will protect itself.

The stock exchange proclaimed a moratorium, and so have the banks. The banks are asking for 30 and 60 days' notice before paying out savings deposits.

It is a measure of self-protection, and also a protection if not a convenience to the depositor. So the clearing houses of the various cities were compelled to practice moratoria. They are postponing the payment of money to suit their convenience.

How natural that is! You would do it, too, and so would everyone you know. Human nature even extends to the so-called soulless corporations.

---

A bank is not a warehouse. That is why the law gives it the right to moratoria in times of great stress.

It costs money to run a bank and naturally the deposits have to be loaned to borrowers at a rate of interest. The bank has to rely on the theory that Jones will not need money at the same time that Smith does. In fact the prosperity of your community, and the conduct of your business, depends upon the condition that some people of the community have idle money.

---

In times of excitement every member of a community could or would go to a warehouse, and get the contents readily. But it cannot be done at the bank.

The bank cannot be operated at no cost. It has to have considerable means to pay its expenses. So it loans its deposits out, less the legal reserve, to your neighbors and friends at a rate of interest.

---

In times of great excitement, Jones, even though not needing money, loses faith, not only in Smith's enterprise but in the banker's judgment as well. Smith has borrowed the money for 60 days and has given good collateral or assurance that he is fully solvent and will pay at the proper time. But Jones is scared. He wants his money and he wants it in gold.

In ordinary times, he would get angry if the bank would insist upon paying him in gold. But the bank, just as the stock exchange, knows that an emergency exists—really a psychological condition—and they go into a condition of moratoria—to protect both Jones and Smith.

---

Moratoria at the banks is really a good thing in this respect. It assures the little depositor that he will receive the same treatment as the large one.

None can go to the bank ahead of him and get his money. And besides, under the law of moratorium, if you really need the money you can get it. Moratoria really takes a smash at the coward who wants to hoard the money and deny his neighbor the use of it.

---

Moratoria is not popular. The clearing house certificates of 1907 did not leave a good taste in the public's mouth. Yet it helped everyone save his honey, and get back to earth again.

It aroused the public to action, and today the new currency bill is designed to do away with the dread postponement of the payment of debts by banks.

---

Under the old banking system, moratoria was an ever possible disease. The old system individualized each bank. It decentralized each one, and fairly locked up its cash reserves. It compelled the bank to hold its commercial paper practically immovable, and it gave no sure currency supply.

There was no sign of any strong central power, and no remedy existed to quiet the nerves of 25,000 bankers and their numerous depositors.

There was no central supply that a hard run bank could go to. If the bank went to its neighbors, they became suspicious and would keep their cash—a matter of self preservation.

Naturally, the creditors of the affected banks could get no money, and the distrust soon spread into a panic. Simply because Jones wanted his idle money which was loaned to Smith.

---

When the big bank suspended, the public got a terrible fright. The other banks started to strengthen their reserves. They demanded that loans be paid, and refused new loans utterly. Everyone wanted his cash—and at any price.

Called loans made every one sell what holdings he had. Naturally prices dropped, and business ran into nothingness,—all because Jones wanted to see his dollar which the bank loaned to Smith; and because the bank could not take Smith's paper somewhere and get the dollar which Jones in his fright demanded, and which he would redeposit later.

---

The new currency bill will be a sort of anti-toxin to moratoria. It provides for reserve banks whose chief business will be to rediscount commercial paper.

When a bank finds itself in need of currency, it may take its assets in commercial paper to the reserve bank and turn it into cash. When Jones gets frightened now, and demands his money, the bank may take Smith's paper to the central source and get the cash.

No neighboring bank will become suspicious. No credits will be restricted. No cash will be hoarded. No loans will be called and business will not shrink into nothingness.

---

Panics are now to be a memory. At least, it is the hope of everyone that the new currency bill will not have to run the gamut of a wild credit expansion. Everything can be made absurd if allowed to run beyond the bounds of reason.

We know full well that figures do not always tell the truth.

Benjamin Franklin left $100,000 to the city of Philadelphia. He figured out that if it was left untouched and interest compounded, that a cycle of 100 years would find Philadelphia with a Franklin gift of $5,000,000.

It has so happened that this fund, in all these long hundred years has not grown at all. It still stands close to where it started. Simply because the use of the money was left to exemplary citizens, who took mild interest in the fund, and loaned it unwisely.

It goes to show that money has no potential value. It must be kept moving wisely to even pay the expenses of keeping it. And it also shows that financial plans and hopes can go astray.

---

The conditions of today focus our attention on our telephone business. You have not heard of any telephone company relying upon moratoria. This device is practically unknown to telephone companies.

You have not heard of any subscriber loss—you make him pay in advance. You have not seen any less stress in the demand of the new subscriber for service.

It actually seems that the telephone companies have lesser reactions from the great European war than anyone else. You will not see any increase in prices on account of loss of foreign competition.

The war has effectually shut off competition in steel. The seller seems to be in command. The demand for copper has fallen entirely off, as Europe seemed to be holding this commodity up. You may even get cheaper wire. While at the same time, public utilities that buy steel will have to pay more.

The telephone man is playing in the usual good fortune of the business.

---

The veneer of civilization is not even skin deep. It seemed impossible that men will clash with deadly weapons when the ways of peace are more effective. It would seem impossible that Jones, who has idle money in a bank, and knows that it is loaned to Smith for legitimate enterprise, should get frightened and demand his money. Yet everything seems possible in spite of the best laid plans of men.

It does seem as if the new understanding in finance is a great advance. But no man can foresee its greatest weakness. It has not yet had its baptism of fire.

---

Benjamin Franklin was an inspired man. He was the man of the hour in diplomacy. In finance, philosophy and every activity, he was a master.

I wonder what he would say if he were to return and find that Philadelphia simply buried the talent he gave it. Such are the plans of men.

---

In your war sympathy, be sure that you do no nation an injustice.

You remember how we sympathized with the Japanese, and today find some threat from that source. And how we pulled for the Boers when England really is a necessary friend.

Just who started the present trouble in Europe will trouble historians for a century.

---

We can get a lesson from the world's moratorium—pay as you go. And when great nations order a postponement of payment of debts, remember it is a case of a human little thing on a big scale.

Postponing payment is a bad habit as well as a bad business.

MORAL: Postponement of debt paying is only a temporary luxury.

---

### A Woman Wire Chief.

Portsmouth, Ohio, has the distinction of having one of the few women telephone wire chiefs. She is Mrs. Beatrice Colburn, wire chief for the Portsmouth Telephone Co. Portsmouth has a population of 30,000 and the local telephone exchange has an ultimate capacity of 3,600 lines, the present equipment being 1,800 lines, four-party, harmonic, automatic ringing.

It is unusual to see a young woman in charge of a wire chief's desk, especially in a plant of this size, owing to the skill and experience required. It is seldom that a woman gets a chance to acquire the necessary training.

Her duties are to make all tests; give location of all trouble reported; direct the operation of from one to three outside men; keep the records of cable pairs, both outside and inside of the exchange, and pole line tests; the "move and change" records; to assign jumpers at the main, terminal and intermediate frames; give instructions for running bridle wires at cable boxes and make reports at regular intervals to the officials.

She refuses to become excited when the situation becomes trying, but uses her head and handles the case in hand diplomatically or with the iron hand as the occasion may demand, and it is said that her judgment is seldom in error. She gets results that have made her popular with the officials.

A good horse is Mrs. Colburn's hobby and she spends much of her spare time with her driving horse, where she shows the same judgment that she uses at her desk.

# The Rejuvenation of the Craneville Telephone Exchange

**A Serial Story Telling How a Rundown Telephone Plant Was Rebuilt, Enlarged and Changed Successively from a Grounded to a Local Battery Metallic System and Later to Common Battery —Problems Encountered by Every Practical Telephone Man**

**By Paul Hamilton**

"It w· . a very careless piece of work, Frank," Mr. Barrows remarked, referring to the cable work done by two transient cablemen and a helper.

"You see they not only left the ends of both cables stripped so the rain soaked through thoroughly during the night, but they also failed to plug up the lateral pipe and that is probably full of water or partly so."

"That won't matter so much, will it? The cable in that is lead covered."

"It may matter a great deal for this reason: As you see, the pipes are brought down the pole and underground to the pit in the apparatus house. There was a mistake made at the inside end but I overlooked it until one cable was pulled in. The trouble would not have happened had they finished the work in order, instead of jumping ahead and cutting into that cable yesterday when it was evident they could not get it closed for the night. Here (Fig. 127) is the way it lays now," and Mr. Barrows outlined the layout on the fence.

"When they finished pulling the cable in, they plugged the inside end of the lateral as they should, but instead of doing the same at the pole end, they left it open. The part of the lateral underground is now filled with water, and the filling at the inside end holds it to a level of about two feet above the ground line.

"This morning the pit was about half full of water from this lateral, as a result of the plug at the inside end being removed to let out the water which had run into the empty duct. It is not a difficult matter to draw off the water still standing in the bend in this pipe. If we leave the water

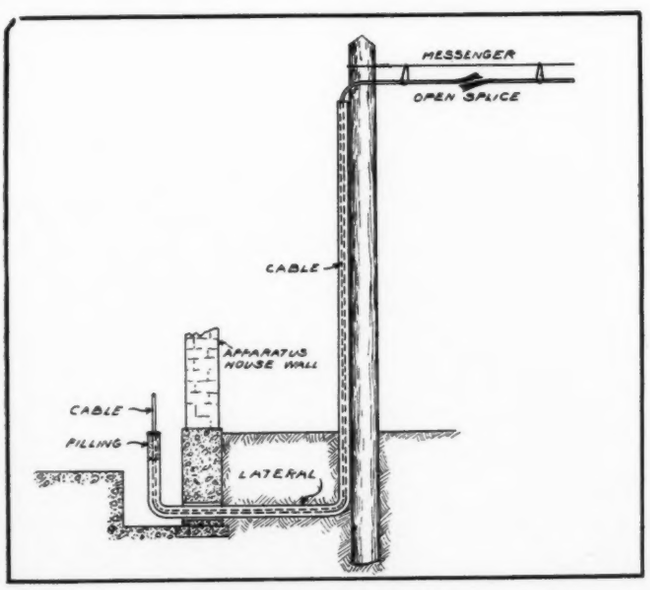



**Fig. 127. The Lateral Intake.**

standing in the duct with the cable, next winter it will freeze. Even if it does not burst the iron pipe, which is very likely, it will crush the cable and cause a lot of trouble."

"What shall we do about it?" questioned Frank.

"That is what the trouble is about. I shall insist upon their cutting the cable back at the next pole and pulling in a new piece to the pit, after removing the water from the lateral. They claim they can boil out the cable and draw off the water by drilling the lateral at the bend in the pit."

"More work, more pay," said Frank.

"More work and no pay at all for it," Mr. Barrows replied. "If they had taken the least precaution to protect their work, it would be different, but they didn't even put a piece of canvas over the splice—just wrapped it with muslin. They had rubber tape—a 'blanket' it is called—for the purpose, but they did not use it."

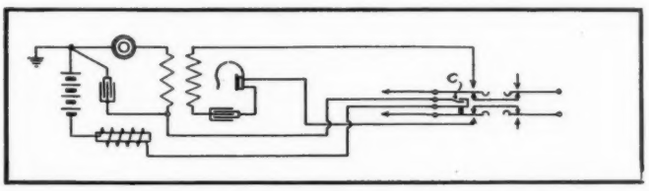


**Fig. 128. Transmitter Battery Through Key.**

"They say they are going to wire their boss to come down here."

"That may be, but he can't change the conditions they have brought upon themselves."

Frank, Germany and the Doctor spent most of the day uncrating the new board and hoisting it, a section at a time, into the new exchange through a window. In the evening they held their regular conference in the new operating room.

"Maybe this will save me drawing pictures," Mr. Barrows remarked as he lifted one of the plugs from the cord shelf. "I think we finished the plug and cord, except one point. Of course these plugs are comparatively new and bright, but by the time the board is connected up, they will be tarnished. The discoloration offers resistance to voice current; the more tarnished they become the greater the resistance. Then, also, they become slightly covered with oil from handling, and require cleaning at least once a week, to be kept at their highest efficiency—a small job for the Doctor.

"We will have a one-tenth horsepower motor mounted on a small portable table. On the motor shaft, there will be a burnishing disk or wheel made of cloth. In this way it only requires a few seconds to polish a plug. Now if you will come over to this table, we will take up the cord circuit—that is, parts of it, beginning at the key.

"The keys in this board are quite similar to those in the old board. I have explained about adjustment before. In this key we have another contact on the listening side (*C*, Fig. 128). By using this contact, the battery is cut off from the transmitter, except where the key is in the listening position. The saving of battery does not amount to much, nor does it add anything to the life of the transmitter. It does, however, rest the operator's ear from a continual hum, caused by vibration and outside noises when the set is not in actual use. It also prevents her from attempting to talk to a subscriber with the listening key closed."

"There are two keys in each position with two handles already," said Germany.

"Those are for use on the farmer lines where parties on the same circuit desire to talk. By throwing the inside key, the operator will have supervision; that is, she will get a disconnect signal when the parties talking, hang up—in other words, when the line is clear—as there is also a clear-

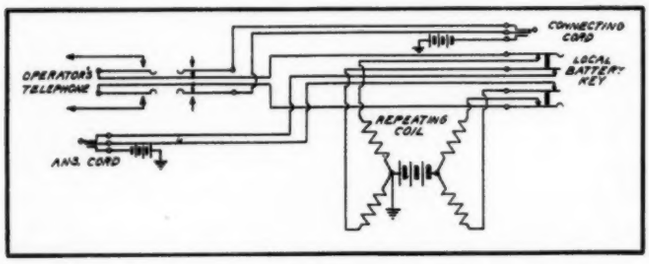



Fig. 129. Operator's Common Battery Key with Local Contacts.

ing-out drop connected to the jack. When the inside key is normal, the outside key acts the same as any other key for local work. The inside key cuts off the office battery from the cords, so the pair can be used to connect two farmer lines, which will be local battery for a time at least. The circuit is like this (Fig. 129):

"I said there is a clearing-out drop. This is not actually true. The subscriber's drop acts as a clearing-out drop on the magneto lines. The board, as you see, is wired for 16 circuits, eight of which are fully equipped.

"We come now to the supervisory lamps which are located in front of their respective pairs of cords—the 'pretty little lamps,' as Germany called them. Their purpose is to attract the operator's attention after a connection is established. They are arranged in the circuit so that they can be made to flash as the subscriber works the receiver hook up and down. The original circuit used was very simple (Fig. 130-*A*). Of course this scheme is still followed on a two-wire circuit. In the three-wire circuit, it is modified in this way (Fig. 130-*B*):

"The scheme looks all right on paper but in practice it had a disadvantage. In order that the relay would operate upon the impulses caused by the battery on the cord being cut off, at rapid intervals by the action of the receiver hook, the relay armature must be closely adjusted. It was presumed that it would close the lamp circuit long enough for the lamp to light. But it was discovered that

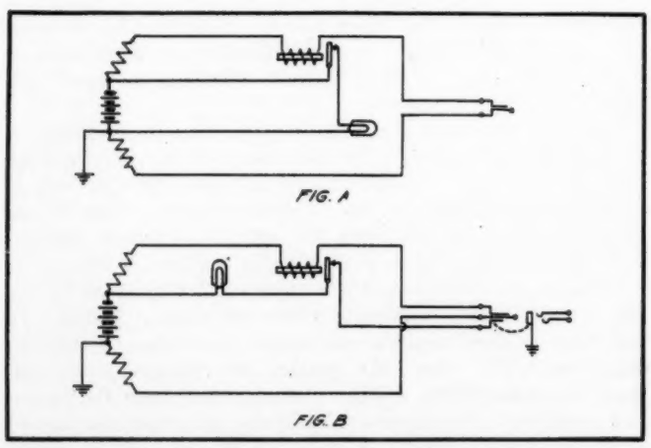



Fig. 130. Simplified Circuit of Early Supervisory Lamps.

its action in many cases was so rapid, that it failed to close the lamp circuit and, if it did, the brief space of time required for the carbon filament to heat and glow had not been taken into consideration. If all subscribers could be taught to act deliberately and flash the operator moderately, all would be well. To eliminate this fault, it was necessary to re-arrange the circuit to overcome the irregular and erratic action of the receiver hook.

"It was modified in this way (Fig. 131). By this method, the lamp is in a closed circuit all the time through the sleeve of the jack to ground. When the relay is normal and the plug is inserted in a jack, the lamp glows brightly. When the relay acts, instead of opening the lamp circuit and allowing the carbon filament to cool, a high resistance shunt of about one-third the resistance of the lamp is closed, cutting down the current flowing through the lamp. Still, enough passes through to keep the filament glowing dimly. Any action of the relay will open the shunt and the lamp will glow at full candlepower almost instantly, being already partly heated."

"A circuit will break at a relay contact easier than it will make," the Doctor remarked.

"On the gravity type relay, yes," agreed Mr. Barrows. "The armature must necessarily be light and of itself does not rest very heavily upon the back contact. To overcome this there are types made with a delicate spring, arranged to cause the armature to rebound more quickly and forcibly upon being released by the magnets. It is a good principle where the back contact is used, as is the case in some circuits.

"The glow of the lamp is made more pronounced by the

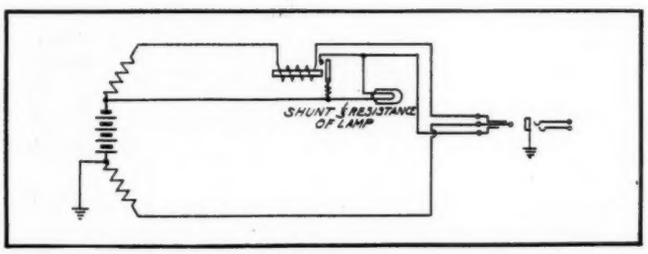



Fig. 131. Operation of the Supervisory Lamps.

use of a clouded or opalescent cap—the light being radiated evenly by the convex surface which extends slightly above the key board.

"There is another point to this circuit; which may never come to your notice but which it is well to know. As the winding of the relay is in the talking circuit, it presents an inductive resistance or retardation effect which affects the transmission slightly. To overcome this as far as possible, a second winding is added to the relay—merely a non-inductive shunt—which allows voice current to pass with less interruption and does not interfere with the action of the call to any extent."

"What is the difference between the make-up of a core and winding for a relay and for a retardation coil?" the Doctor inquired.

"I will not go into the technical points as it will be better for you to get them from a more competent authority. But take it this way (Fig. 132-*A*). For resistance to current flow, to offer means to use up a certain amount of electrical energy, we wind a coil. By this means we merely lengthen the path the current must travel and reach the desired point.

"For retardation (Fig. 132-*B*), we would wire around a core. Of course we introduce resistance as before but with this difference. Before, the current passing through the resistance coil maintained the same variable volume as its source. Now, by introducing the iron core, a magnetic influence impedes the flow of the current. It smooths the variations, so to speak, allowing the current to pass, but in equal volume. That is why retardation is essential between the cords connected to a battery, as the fine variations from

voice currents lose their identity and cross talk is practically eliminated. In the transmitter circuit the current reaches the transmitter in even volume and is subject to variations there, but if it came through resistance only, there would be certain undesirable variations passing

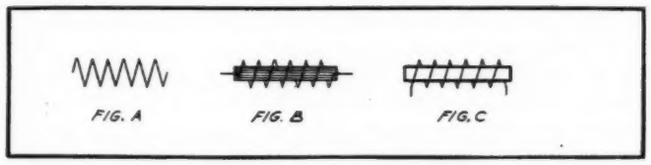



**Fig. 132. Resistance, Retardation and Relay Core Construction.**

through, separate from those made by the voice vibrations.

"For retardation and induction coils, it is known that the magnetic effect is more pronounced when the core is made up of many small units or magnets, so soft iron wires laid parallel are used. Each of these act individually and one upon the other. The counter action between them, while it multiplies the magnetic lines of force, does not create as strong a magnetic pull as a solid core. In a relay the force, or pull—attraction is the exact word—is what is required. Therefore a solid core is used in the relays.

"You will notice, the iron core of a small relay is much larger than the multiple core of a retardation coil five times its size. The exact mathematical relation of cores and windings can be found in any standard authority if you have a desire to go further into the subject. A general idea of their action is, I find, about all that is required for practical work. In general, we should know enough of their uses not to put a resistance coil where a retardation coil belongs and vice versa.

"I guess it's about time the Doctor relieved Miss DeLand at the old exchange."

*(To be continued.)*

**A. T. & T. Station Growth and Government Agreement.**

During the last two years there has been a slowing down in station growth of the American Telephone & Telegraph Co. which has raised the question as to whether the Bell system is reaching the saturation point as to the number of Independent telephone companies with which it can connect, or whether business has caused a considerable falling off of the number of smaller companies which, with better times, would be readily financed and put into operation. If the falling off in Bell stations has been noticeable for the last two years, there is much speculation as to what the falling off will be this year with the government dissolution agreement in force.

By the agreement the Bell company forfeits the right hereafter to acquire Independent companies, while on the other hand it grants the right of Independent companies to use its toll lines under certain stipulations. In a sense, it is argued, this latter provision, in the event of the Independent companies availing themselves of the privilege, will mean that the American Telephone & Telegraph Co. will virtually have additional stations, although they could not be so classed in determining the station additions each year. It possibly should be explained, also, that Independent companies using the Bell toll service commit themselves by the terms of the contract to give the Bell company service over their lines.

These inter-relations are not only going to be watched as to their reference to Bell stations, but as to the Bell company earnings. There is much conjecture in the East on the points involved. The prohibition placed on the American Telephone & Telegraph Co. against acquiring more outside companies involves, according to students of the situation, the question as to whether the company's telephone network as it stands is particularly practicable or profitable, whether or not it was at a stage of development where a sudden cessation of the policy of monopoly would not have a harmful influence on that creative work already accomplished.

Officials of the company believe that these matters are not going to show to any extent one way or the other in Bell company earnings. It is generally understood that they take the view that their companies' network of wires is about complete, and the stoppage of expansion had been about due. They assert that what money would have been spent on acquisitions of this character will now go toward betterments of existing plant.

It is pointed out by officials that while the falling off in the rate of increase of stations has been apparent during the last two years, earnings have as steadily maintained a normal increase, which would tend to show that the development of the system has been of normal and permanent character. Of course, it is too early to determine, at this time, anything in the way of what effect that portion of the government agreement being treated with will have upon earnings. It should be remarked that earnings for dividends decreased $202,085. This is an item which will be especially watched during the next years, when the American Telephone & Telegraph Co. will have to rely upon the dividends of now existing companies. The six months' figures, as stated, however, come too soon after the start of the operation of the government agreement to be especially significant. Nevertheless, they bear out the fact that the company's earnings do not reflect the falling off of increase in stations.

The Bell system for the six months to June 30 added 307,000 new stations, an increase at the rate of 614,000 per annum, which compares with an actual increase of 350,000 stations during the first six months of last year. The figures for the six months as distributed between owned and Bell connected stations are shown as follows:

| | Jan. 1, 1914 | July 1, 1914 | Increase. |
|---|---|---|---|
| Bell owned | 5,415,000 | 5,640,000 | 225,000 |
| Bell connected | 2,718,000 | 2,800,000 | 82,000 |
| Total | 8,133,000 | 8,440,000 | 307,000 |

In 1913 there were added to the Bell service a total of 676,000 stations. If this year reaches the 600,000 mark it will be making a favorable comparison with last and a much better relative showing than many of the larger industrial undertakings. During 1911 the Bell system added 306,000 connected stations. Last year the total declined to 215,000 and this year is at the rate of but 160,000.

The Bell wires now connect with 6,440,000 stations and by December 31 next, this total will probably be 8,750,000. This means that very close to 35,000,000 of the population of this country are directly served by the American Telephone & Telegraph Co., its subsidiaries and connecting companies. From 5,882,000 stations in 1910 to 8,750,000 indicated for the close of this year, an increase of 3,000,000 stations in four years or a yearly average of 750,000 is shown.

**New Publication for Telephone Operators.**

The first numbers of a new publication, "Toll Line Flashes," have been issued at Fort Wayne, Ind., by The Home Telephone & Telegraph Co., of that city, for the promotion of good service and good fellowship among telephone operators, the editor being Martin Umbach. The object of the pamphlet is declared to be not only to keep the interest among the operators alive, but also to give the managers and other employes of the several exchanges it reaches a chance to express their views on subjects pertaining to the telephone business. A feature of the second issue of "Toll Line Flashes" is a brief "talk" by W. S. Vivian, secretary of the Independent Telephone Association of America.

# Public Relations of Utilities in Theory and Practice

"The Public Be Benefited!—Persuade the Public It Is Being Benefited!"—Classification of Men According to Their Business—Divisions of Opinion Among the Classes—Utility Managers Must Have Ability to Analyize, Classify and Present Every Fact Pertaining to Public Relations

By Public Relations Engineer

One of the most serious difficulties to be overcome, is the practice, which seems so prevalent in these days, of classifying a man according to his profession, whether it be business, wage-seeking or wage-paying, politics, education, philanthropy or religion. One of the explanations of the fact that so many former leaders of utilities have lost their leadership, is that they, in common with the prevailing practice, have made this sort of classification. One of the explanations of the fact that so many men, formerly accepted by all as practical, have proven themselves so impractical as to have lost out, is that they failed to see that a different classification was being set up by public sentiment and by law, for the leaders of utilities. They failed to observe that leaders of the large business undertakings are now being classified, good or bad, not according to their profession but according to their practice. Certain utility leaders have lost out because of their failure to realize that they were beginning to be, and in the future will increasingly be, classified not so much as mere utility men, but rather as benefactors, or malefactors, of the common good.

As an indispensable means of self-protection, utility leaders must see to it that all malefactors, whether they profess to be in business, in philanthropy, in political reform, in up-lift, in religion, or what not, *are branded*. Leaders of utilities, as a matter of self-protection, must see to it, first of all, that every *utility malefactor* and every *business malefactor* is branded.

### A Different Measuring of Men.

They must do this just as thoroughly as they must encourage fellowship and co-operate with every *utility benefactor* of the public and every *business benefactor* of the public. Utility leaders would fail if they were to stop here. They cannot stop after having gone thus far. They must with equal exactness "show up" the differences between all who are bruising and being bruised for the common good, and those who are refusing to suffer for the common good. Utility leaders must, with equal exactness, "show up" the difference between the purposes and practices of all benefactors of the public and all malefactors, including those who are in the other professions as well as the men of business.

Since this and the preceding article come closer to "preaching" than any others we may have occasion to provide, opportunity will be taken to insert a sort of parenthetical paragraph. If those whose profession is politics, education, philanthropy, religion or the leading of wage-seekers, constituted any considerable portion of the readers of this particular publication, I would say that there is no less obligation upon the benevolently inclined men of any or all of the professions mentioned, to "show up" those of their own class or classes, those of their own profession or professions, who refuse to suffer for the common good, than there is for the benevolently spirited leaders of utilities or other business to "show up" the malefactors of their class or classes.

And, for the benefit of the leaders of utilities, it is perhaps best to say, right here, that as there is or has been a serious division between those leaders of business who followed "the public be damned" policy, on the one hand, and those who are following "the public be blessed," or "benefited," on the other, so there is a similar division, also, among philanthropists, one class of which contends for the practice of dealing with consequences only, while the other contends for the principle of dealing with causes also—dealing with causes as more important than consequences. There is a corresponding division among educationalists, one class of which follows after culture to the exclusion of industry, while the other class advocates industry as an indispensable element for the attainment of the highest type of culture.

In a corresponding division among politicians, one class, as we all know, favors all grades and gradations of "progressivism" or "radicalism," while the other contends for all grades and gradations of "conservatism" or "reactionism." There is a corresponding division among religionists, one class of which professes to believe that all promises of sociological, psychological or earthly improvement is a devil's lie; that they have divine prophecy for their assumption that darkness is to cover the earth and gross darkness the people; that the present forms of what they call "worldliness" are to be literally destroyed by Providence; and that he is most religious, therefore, who most patiently "waits" for this sort of a "coming of his Lord." The other class professes to believe in, and to be working for, the time when "the kingdoms of this earth shall have become the kingdoms of our Lord." It professes to believe in and to be seeking for the practice of right living "on earth as it is in heaven."

In view of the fact that the church holds the heart-strings of so large a majority of the people to such an extent that we bow in reverence to its authority, when at birth we are christened or consecrated by our parents, when in mature life we wed, and when at the end our friends bid farewell to our earthly form; in view of the grip which the school, the press and the state have of the means and the ways of thinking of the on-coming generation, it is, in the opinion of the writer, a very serious mistake for the leader of any utility, or of any important business, to imagine that the rules or the laws governing his affairs will remain stationary or fixed. It is a serious mistake for him to assume that his business will not be affected or interfered with in consequence of such divergence or disagreement as may arise from the changing ideas of the leaders of religion, education, literature, journalism, politics and philanthropy.

Are not these beneath and behind the law, especially in a country where "the will of the people is the law of the land?" Are not these beneath and behind the very title deeds, the patent or the franchise upon which we must rely for the perpetuation of the utility leader's proprietorship over his property? Can the utility leader rightfully assume that he is dealing in a thorough manner with the public if he ignores the spirit, the purpose or the practice of these professions which, in the mind of the public, are "set apart" for the uplifting of mankind?

Is there not more or less of an estrangement between the leaders of business, as a whole, and the leaders of these up-lift professions as a whole? Is not this estrangement a part, an important part, of the perplexities which are at present puzzling us? Can this estrangement be overcome in any other manner than by a union of those leaders of utilities and of business, who desire to benefit the public, with those leaders of politics, of the press, of the schools, of the churches, and of the philanthropies who are willing to be practical? This means that they are willing to be calloused, scarred and begrimed by actual business affairs when necessary

(Copyright 1914, by S. R. Edwards.)

to accomplish the actual work, which must be done from the inside rather than from the outside, for the real betterment of conditions.

### Are You an Uplifter?

If you readers were of this class, willing to bruise and to be bruised when necessary, willing to be bruised without resentment, without anger, without desire for reprisal or revenge—as football players are expected to take their bruises; and if you were apparently allied with one of the "set apart" or "up-lift" professions; if you were, to all outward appearances, "out of business"—would you not, in order to be at peace with yourself, be compelled to answer such questions as these:

Is it my duty to make my earthly existence as long and as serviceable to the common good as possible?

Can I continue my earthly existence without that sort of earthly support which is obtainable only at the hands of organized production, organized transportation, organized communication and organized distribution?

If I am in duty bound to exist as long and serviceably for the common good as possible, and if such existence compels me to fellowship or depend upon the several organized departments which revolve around that common center, the world-market, am I not prevented, by all the laws of logic and by all the demands of honesty from pharisaically or censoriously striking back or antagonizing the hands of civilization that are feeding me?

To change the figure, am I not prevented, by all the laws of logic and all the demands of decency, from expecting these servants of the common good, however imperfect, to kiss the hand with which I might, if censorious or pharisaical, presume to smite them?

Am I not compelled by all the laws of logic and all demands of humaneness to accept, to recognize and to deal with the fact that in common with all the people who live during my generation, I am an equal heir to this legacy of evil conditions which has been inherited from yesterday?

### Changing a Prevailing Idea.

The thing we have in mind is to change the idea which seems to prevail concerning the line which separates benefactors from malefactors. The thing we have in mind is the development of a fellowship or an acquaintanceship; the development of *enjoyment in a common cause;* the development of joy in a Good Will First undertaking. This undertaking shall include every man from the realm of business, from the realm of philanthropy, from the realm of religion, from the realm of education, from the realm of politics and from the realm of industry, who is willing to bruise and to be bruised without resentment, without desire of reprisal, without seeking revenge—in order that the public may be benefited.

The thing we have in mind is, that regardless of anything and everything which we of today might do or leave undone, something of this sort must, in the very nature of things, evolve, if civilization, progress and prosperity are to be made permanent as a "going concern." The idea is that if a Good Will Fellowship does not take up the promotion of Good Will First in some such manner, then civilization, progress and prosperity will cease to be a "going concern" and then, another dark age is before us.

To avoid being done away with, utility managers must benefit the public and persuade the public that it is being benefited. It goes without saying, therefore, that before they can do this they, themselves, must know the difference between all the purposes and practices that are harmful and those that are beneficial. They must be able to analyze and classify, not merely a utility's purposes and practices, but the purposes and practices of every undertaking. They must be able to do that because they are compelled, by the logic of events, to bear the burden of leadership of public sentiment. To lead public sentiment they must maintain, as unerringly as possible, perfect standards and ideals with regard to all purposes and practices affecting the common good, and what purpose or practice does not affect the common good indirectly if not directly?

In addition to knowing for himself the difference between a purpose and practice that is for the common good and a purpose and practice that is against it, the utility manager must be "able to give a reason." He must be able to persuade others that he is trustworthy in his decision.

### The Service That the Public Needs Most.

*The most valuable "service" that any utility manager could "supply"* to the public—the benefit that the public stands in need of most right now—is not a different quality, quantity or cost of light, power, water, transportation or communication, but the "showing up" of every purpose and practice, the "showing up" of the fact that the common good is affected by every purpose and every practice of every department of human interest and endeavor.

The time has come when, to avoid being done away with, the leaders of public service must serve as the guardians or guides of public sentiment. The day is here when leadership or management of public service undertakings includes benevolent and philanthropic guidance of public affairs—the safeguarding and advancement of public relations, as a whole.

"I agree with you that our men of business, in order to avoid defeat, must accept and practice more and more the spirit of philanthropy; and that, in order to avoid defeat, also, our men of philanthropy must get under the actual burden, the hazards and the ill will that is inseparable at this time, from most if not all business undertakings. Our philanthropists and welfare workers generally must improve their own undertakings by becoming in reality and in person, rather than figuratively or by proxy, partakers of the sufferings, the work-stains and the work-callouses of business, which as a right arm of civilization, provides the food of philanthropists and uplifters." Thus reads a letter from a man who wields, with tremendous effect, the power of a federal office which deals with the problems of progress—the head of a federal department which is concerned about the quality of the men of tomorrow.

### Ability to "Show Up" Every Fact and Factor.

Utility managers need and must have the ability to show up every fact pertaining to public relations. They need and must have the ability to "show up" the fact that an unjustifiable ill will has been cultivated in the very heart and soul of public sentiment; that the usefulness of utilities to the public is being seriously if not fatally interfered with by the activities of certain men who, claiming to be "set apart" from the businesses which they annoy, accept their own material necessities and comforts in the form of taxes, donations, endowments and appropriations known by them to be the direct outcome of the very purposes and practices—the very activities and undertakings—which they denounce.

Leaders of utilities must admit the contention of certain educationalists that business men, and business men only, can teach such important and fundamental business facts and factors as "the organization, direction, and developing of wage-seekers; the mastering of the forces of nature and the use of the materials of the earth; and, dealing with that world-market that supplies the needs of mankind." Leaders of utilities must admit this; and then, in addition to what they have been doing, they must take upon their shoulders the burden of teaching. In fact leaders of utilities are already moving in this direction. There is a constant increase in the number of businesses that are operating schools and furnishing textbooks and "literature" to every man and woman associated with their undertakings.

A Combination of "Book Learning" and Work.

Not long since, while traveling in the most casual way on an elevated train, I sat near a uniformed employe of the utility that was serving me—an employe whose badge announced that he was an "instructor." With an open textbook in his hand, a book that had been originated and supplied by the utility organization, he was combining "book learning" with the facts and experiences of actual life. This was being done by bringing to the mind of a newly employed trainman (a novice or "green" hand), a printed page containing the wisdom which others before him had worked out to meet and to solve the very problems which, from moment to moment, were then and there confronting him in his apprenticeship. There was no appropriation from a taxpayer's treasury beneath or behind this rapidly moving school—no endowment, no subscription list.

If the leaders of welfare work (philanthropy, religion, education and politics) contend that as a matter of necessity, business must conduct in a commendable way, a school of its own; must carry on a complete welfare work or philanthropy, encourage thrift on the part of wage-seekers, stimulate patriotic citizenship among all associated helpers, and, possibly, provide a moral and spiritual atmosphere or "invisible" church throughout all of its endeavor—by what means could one excuse a school from taking upon its shoulders the burden of sustaining itself by means of some profit producing and educative industry? By what means could one excuse philanthropy, the church, or the government from supporting themselves with a similar profit producing undertaking?

Property is Not Pelf Nor is Profit Piracy.

Utility managers must first see for themselves, and then make plain to all others, the fact that the item of profits is being juggled—in some instances by mistake and in other instances by malice—at the hands of those who are leading our public sentiment. Utility managers must "show up" the fact that unless there is a middle pathway somewhere between the one extreme of piracy and the other extreme of pauperism; that unless there is such a thing as a justifiable profit—then the undertakings which profess to be "welfare work," "up-lift" religion and government, are hypocritical accomplices of profit pirates.

In the hotel where this article is written, I can see several copies of a full sheet advertisement for a most commendable small college of the Middle West. These advertisements are being distributed by the president of the college, who is on a tour during which he calls on the leaders of business, including the leaders of utilities, for *subscriptions, donations* and *endowments* with all of which the writer is in fullest sympathy and accord. But the very neat advertisement to which I have referred contains a clause which every utility manager must "show up" as effectually as the political economists of that college have "shown up" the evils of "the public be damned" and "charging all the traffic will bear."

"Blank College does not seek financial profit or pecuniary return of any sort whatever. It seeks only to serve." This sentence is not quoted word for word as it appears, because we must not be personal, since the attitude disclosed by the actual sentence is so universal that its author merits sympathy and help more than censure or opposition. But how can this college, or any other self-appointed leader of the minds, the morals, or the citizenship of the oncoming generation, have any warrant, authority or right to ask profit-producing businesses for help with one hand while wielding with the other a club which insinuates that profit-producing undertakings are less trustworthy, or less commendable?

Were I a cartoonist I would paint profit-producing undertakings as a dog, bearing home in his mouth a basket of food for a group of welfare workers, philanthropists, politicians, teachers, preachers and leaders of wage-seekers—of the censorious and "better than thou" type. I would show the leader of the group offering to the dog a tempting morsel in his outstretched left hand, while concealed behind his back, in his right hand, I would have a club for the punishment of the canine, after the basket of "materialistic" or "uncultured" earthly necessities had beeen successfully secured as an endowment, appropriation or donation. And I would have this leader say, coaxingly: "Come Shep! Come Shep!"

Do not misunderstand me. In a previous paper I have said there are re-formed and unreformed utilities. There are leaders of utilities who are commendable, and leaders of utilities who still deserve condemnation, and it is the former, not the latter, that I am referring to as "Shep" in the foregoing. Remember, also, that I have no criticism, but on the contrary, the highest appreciation for many commendable welfare workers. Remember that the uncomplimentary comment herein contained refers solely to the "censorious" and "better than thou" type.

With this distinction clearly in mind—the distinction between the utility managers who are right and those who are wrong, as well as between the welfare workers who are voluntary partakers of the sufferings of their fellows, and those of the "censorious" and "better than thou" type—may we not with propriety ask this question: How much longer will worthy leaders of utilities continue in their submission to unsympathetic mischief making, or to openly avowed unsympathetic interference? How much longer will they ignore the openly professed cultivation of this fatal ill will?

But the reader is saying: "Even though I admit every point you have tried, in this article, to present, *in what practical way can I proceed to remedy matters?*"

My answer is: This paper is already too lengthy. If you will do me the honor to read next week's article, we will try to find a polar star or compass to rely upon while blazing a trail through the seeming impenetrable forest.

---

**Consolidated Telephone Rehabilitation at Carbondale, Pa.**

During the past few months the Consolidated Telephone Co., of Hazelton, Pa., has been engaged in important rehabilitation work. The exchange at Carbondale has been entirely rebuilt, the exchange quarters remodeled, a new switchboard installed, and many of the aerial lines replaced by cable at a cost of $25,000. The company has replaced in Carbondale 900 telephones with new common battery instruments. It has installed 21,497 feet of cable, carrying 1,609,425 miles of wire, and 613,187 feet of open wire, a total of 2,222,612 feet of wire.

The opening of the new exchange to the public was marked by a banquet given by the company to its employes. Prior to the banquet the employes received visitors at the exchange and explained the new system.

When the employes had gathered about the banquet tables a signal from the speakers' tables was given in the form of a telephone bell ring.

The menu was an ingeniously designed list of dishes each associated with the name of some company manufacturing Independent telephone apparatus. At the head of the menu was printed: "Rockefeller says: 'Waste of time is the greatest cost in business today.' Eating is business—Get busy."

H. H. Weibel, of Allentown, commercial superintendent of the Consolidated Telephone Co., who had charge of the arrangement incident to the exchange opening, introduced the toastmaster, Edward M. Prisk, general manager of the company, who spoke on "The Consolidated and Its Future." Other speeches were as follows: "The Bank Balance and the Pay Roll," by J. R. Lynch, auditor; "Consolidated Service," by L. H. Baker, traffic manager; "The Carbondale Plant," by C. J. Larsen, engineer; and "Carbondale Prospects," by E. O. Zarker, district superintendent.

# Practical Subjects—Letters and Discussions

### New Operating Rules at Norfolk, Neb.

Operator: "Number please?"

Subscriber: "923."

Operator: "923?"

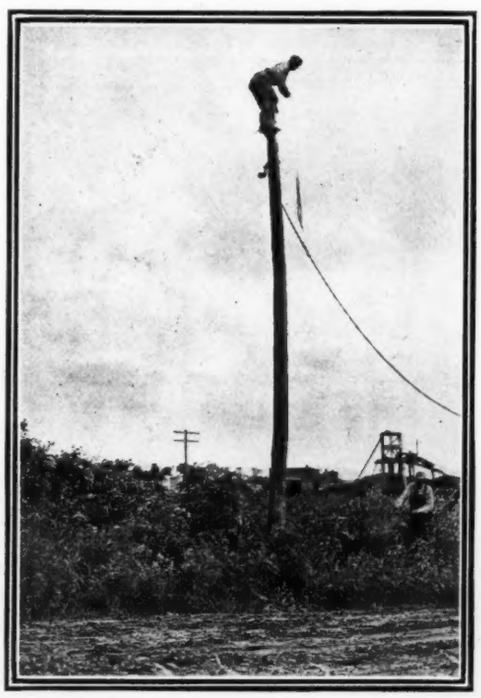
Subscriber: "Yes (pause). No, no! I forgot; I wanted 932."

Operator: (answering 923) "No. —— called you, but he does not want you now. He wanted another number. Please excuse him."

The foregoing is an illustration used by the Nebraska Telephone Co. in promulgating its new rules for operators at Norfolk, Neb. In cases where the operator does not hear correctly the number given by the subscriber and repeats back the wrong number and is corrected, she adds, "I beg your pardon." In cases where a party is rung but the calling party has hung up, the operator says: "I beg your pardon" or "Yes, I rang your telephone. No. —— called you, but he hung up. Please excuse him."

### Experience in Finding Trouble on a Country Line.

That the troubleman on a rural line finds ample opportunity to exercise his ingenuity and meets with as much human nature as anybody else, is indicated by the following account of actual occurrences contributed by a rural line trouble hunter in Missouri. An idea of the "stunts" that farmers in that section undertake in telephone construction is indicated in the accompanying illustration from a photograph accompanying the article. This shows farmers putting in a high pole at a railroad crossing. The farmer lineman at the top of the pole is engaged in pull-



Farm Telephone Line Construction in Missouri.

ing up the wire stretcher. In recounting some experiences our correspondent says:

The line had been "dead" for several days before the sleepy farmers who owned it woke up to the fact that the trouble was "not going to get all right." While we were opening a surface drain, in a shower of rain, one of the farmers who was expecting an increase in his family, came driving up in a big hurry, saying: "Get in the buggy with me and come and fix our telephone line. We can't get central, or anybody, and I am liable to need the telephone in case of sickness, at any time, and want the doctor and want him bad."

Going to the farmer's home first, I found his telephone O. K. His mother had moved to town to educate the only daughter, and the telephone had been moved to the home of the son several weeks before the trouble came on.

"How was the wiring left, over at your mother's house?" I asked. (The folks had locked up the old home, only moving to the city while school was going on.)

"Oh, that is all right," he replied. "We have had the telephone in our house quite a while and the line was all right until last Sunday it got grounded."

I replied that we had better go in and see any way. "I don't think the trouble can be over there," he said, "because the house has been locked up ever since mother moved to town," but to satisfy the "trouble hunter" we went over. The young farmer unlocked the house and lead the way to where the telephone had been. The first glance showed that the loose wires left hanging when the telephone was removed, were hooked together.

Without touching anything, I said: "There is your ground."

"Where?" asked the young farmer, stepping up. "Well!" he exclaimed, "I wonder how that happened. Sister was in here Sunday after some of her things, and these wires were just hanging loose, and she has hooked them together to get them out of the road."

Going back to the house of the son, we could ring to the east end of the line and they commenced to rejoice about having it fixed so soon.

The farmers out east said, "It rings fine here;" but the farmers on the west end of the line between us and central reported, "It rings but does not ring clear." Central would answer, but the ring from central came in very weak, indicating more trouble. Having had a thunder storm a few days before, I suspected dust in carbons was causing the trouble, but upon visiting several homes I could not find any dust in the carbons. At a telephone located near a point where a wire ran off to a couple of farmers a mile south, I could not get either of them. There were about 20 telephones on this line, and evening caught us at a telephone at the extreme south end of the system.

The farmer, who had worked several years on telephone lines before he commenced farming, assured me he had cleaned his lightning arrester out, and the trouble must be some place else. He was counted as a sort of expert and being handy at anything he undertook, I took his word for it, and he took another look at the arrester while we were in the room.

We could not ring any one from his telephone, and I told him to listen on the line at 8:30 and see if he could hear me talk from home. We went to the remaining telephone on that branch and found it clear when off the line but dead when connected. I called from home, as agreed, and found the farmer's line better than when I left home but not clear by any means. The two farmers on the south branch were dead to all the rest of us.

The next day I went trouble hunting again, and took an extra telephone along for a "test set."

Upon testing at each telephone near this branch wire to the south, and finding each telephone clear, I knew the trouble was in that direction, but knowing the ability of the telephone man who owned the instrument at the ex-

treme end of the line, I was confident in his judgment. But a test was in order any way. Going to his home, I set the telephone up outside, and found it dead. The ex-telephone man was not at home. But I decided to make a thorough clean-up. The telephone on the ground outside the house was connected with the line, but was as dead as the one in the house. I mounted the pole next the house and unwound the insulated wire to clean it, as it was badly corroded. While scraping the disconnected insulated wire, the telephone on the ground rang clear and it was the ring of the folks where I was testing. I called the lady and she came out and talked. The call came from the other telephone on that troubled end.

While they were talking, I was in an uncomfortable position on the pole, and paid but little attention to their conversation, after noticing their first rejoicing. But in the talk the lady said it got so she could hardly hear her neighbor. "Well," I said, "I wonder if we can call them now." I took the crank of the telephone on the ground and it rang as clear as could be. I stood and watched expressions on the lady's face while she talked to her friend, and wondered if the line would "stay fixed." When she and her friend had said goodby, I tried to call my own home, and the thing was dead again.

I could not ring the telephone in the house and the telephone in the house could not ring the one outdoors.

I was greatly puzzled as to the cause. I had cleaned all wiring outside the house and the farmer driving my buggy was cleaning the wiring at the telephone in the house. The telephone outside had rung clear, when connected with the house wire, and then failed me when I thought all was well.

The farmer with me, who claimed to have fixed several troubles occurring on the line, assured me when I went in the house:

"I have cleaned this all up, wires, lightning arrester and all. It is all right here."

I guessed some more; but went to examining. I removed the carbons on extra arrester above the telephone, and the line was clear, and fine.

My farmer helper rejoiced with me, and we went home leaving the carbon laying on the telephone.

I had just reached the house at home that night when the ex-telephone man called me. The first thing he asked was: "Where did you find that ground?"

"In those carbons of your extra arrester," I replied, "and we left them out."

"Well, let's see about that," said he. "Now can you tell any difference?"

All was clear as ever. He then assured me: "The trouble was some place else, but cleared while you were at my house."

I told him to put the carbons in a time or two, and in a change or two, it was "dead."

Moral: In testing for trouble, take no one's word. Be sure you're right.

Rich Hill, Mo. W. J. Hall.

### Lead Pencil Marks Cause Cross Talk.

When I took charge of this exchange the lines were giving considerable trouble. Cross talk was so bad that when a subscriber was connected, one could talk to him on almost any pair in the cable. The first year I worked to get the pole lines in first class condition, but the cross talk still remained. I had been so busy wiring terminal poles and cross-connecting racks, that I had no time to investigate the cause of the cross talk. I laid it to damp cable, a poor ground, or the return wire. Upon investigation the ground and return wire were found to be good.

I disconnected each pair of wires and tested them carefully. They rang clear and the cross talk ceased, but when they were connected to the strip the cross talk was as bad as ever.

To save the expense of binding post terminals, the ends of the cable conductors had been brought under wood screws and washers in a hardwood strip. In order to place the screws in line, the strip had been heavily marked with a black lead pencil, which, when the wires were screwed down, made a connection between all of them. A high resistance connection for the generator current would not ring through it, still its resistance was low enough to allow talking current to pass from one end of the strip to the other, thus bringing all the lines together when in use. When the pencil marks were erased, the cross talk disappeared.

Beattie, Kan. Wm. Ellis.

### Cut-Over to New Exchange in Chicago.

The Chicago Telephone Co. recently cut over 8,500 subscribers from its old Irving exchange to its new Irving exchange, a mile distant from the old building. The new structure, which is three stories in height, will have two units, the Irving and Monticello. The Irving switchboard on the second floor has a present capacity of 10,000 subscribers and the Monticello board on the floor above has a capacity of 6,000 subscribers. The new exchange will care for all the service north of Diversey Boulevard and west of North Western Avenue, practically to the Chicago city limits.

### A Window Display at Washington, Ind.

The accompanying illustration shows one of several window displays which have been designed by the business firms of Washington, Ind., for the Pike County Telephone

**Window Display of Automatic Equipment, Washington, Ind.**

Co. The display shown in the illustration was put on by O'Donnell, Barrows Co., one of the largest hardware firms in Southern Indiana, and illustrates the effective means adopted to bring automatic telephone apparatus to the attention of residents of the city, who may thus become subscribers of the local telephone company.

# Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

**Los Angeles Companies Advance Rates Pending Litigation.**

Temporary telephone rates in Los Angeles, Cal., $1 a month higher than the schedule fixed by the city council for business rates and 25 cents a month higher for residence rates, have been adopted by the Pacific Telephone & Telegraph Co. and the Home Telephone & Telegraph Co. of Los Angeles. The advance was made when Federal Judge Erskine M. Ross granted both companies a temporary injunction against the rates fixed by the city council.

Attorneys for the two companies told the court that the corporations they represented would find it impossible to give adequate service and make a reasonable profit under the rates named in the new ordinance. As proof of this point Attorney Gibson, representing the Home company, said that the expert employed by the Board of Public Utilities when an investigation was being made into the rate question, had reported that neither telephone company was earning an adequate return on its investment. The residence schedule of rates to be charged by the telephone companies is identical with the rates recommended by Engineer James E. Barker of the Board of Public Utilities. The Barker recommendations were overridden by the utilities board and the city council, and the schedule which had been in effect since the 1912 telephone litigation, was adopted by the city council as the rates for the year of 1914-15.

The companies will be required to post a bond to guarantee to reimburse the telephone users the difference between the rates announced by the companies and the city's rate, if the city's rate is sustained.

Attorney John G. Mott, representing the Bell company, also announced that the rates to be charged by the companies as temporary rates while the city's schedule is under fire, are almost identical with the rates proposed months ago by Kempster B. Miller.

The schedule on which bills for telephone service for August were rendered is as follows: Business telephones: one-party, wall, $6.75; one-party, desk, $6.75; two-party, wall, $4.75; two-party, desk, $5.25. Residence, one-party, wall, $2.50; one-party, desk, $2.75; two-party, wall, $2.25; two-party, desk, $2.50; four-party, wall, $1.75; four-party, desk, $2.

**Telephone Agreement at Berkeley, Cal.**

The city council of Berkeley, Cal., and the Pacific Telephone & Telegraph Co., recently reached a tentative agreement, subject to ratification by the California Railroad Commission, under which the city accepted an offer of the company to begin paying immediately to the city two per cent. of the corporation's gross receipts. This agreement, upon ratification by the commission, will terminate a difficulty of long standing which has involved considerable litigation.

As the telephone company has until 1919 to serve under its present franchise, the agreement means that Berkeley will receive two per cent. of the gross earnings until that time. Beginning with 1919 the Pacific States company will operate in Berkeley under the franchise purchased from the Home company, and which extends until 1957. As this franchise includes the two per cent. clause, the gain to Berkeley by the tentative agreement covers that space of time between 1914 and 1919. The percentage of earnings to be paid to the city, through both franchises to 1957, will amount to about $750,000.

**To Vote on Change in California Commission Law.**

A constitutional referendum will be held at the fall elections in California to determine the question of extending the jurisdiction of the California Railroad Commission to cover all cities. The original law provided that public utilities in cities came under state regulation only when the cities voted to place them under the commission's jurisdiction.

**Franchise Discussion in Spokane.**

The terms of the proposed franchise to be granted by the city of Spokane, Wash., to the Bell company has recently been the subject of vigorous discussion in that city. At a recent meeting of the public ownership league, at which City Commissioner C. M. Fassett, explained the ordinance section by section, it was unanimously voted to have the franchise submitted to a vote of the people unless certain amendments were included in the franchise. These include a provision for lower rates and a clause limiting the life of the franchise to not to exceed 10 years with the right of the city to cancel the franchise on reasonable notice.

D. C. Coates, who proposed the amendments, charged that the Bell company had corrupted politics in Colorado and would do the same thing in Spokane. Mr. Coates urged the submission of the amendments to the city council, and failing to secure the adoption of these, that resort be had to a referendum.

Commissioner Fleming explained that he was no supporter of the pending franchise, which had been agreed by the votes of four members of the city council. He explained his effort to retain competition by the aid of a physical connection and said this would have relieved the situation.

**Minimum Wage for Telephone Girls.**

The Minimum Wage Commission of the state of Washington has adopted a wage of $9 as the minimum payable to telephone girls throughout the state, excepting only those in certain small exchanges. This is the fourth such wage adopted by the commission and compares favorably with the others, these being $10 per week for mercantile workers, $8.90 for factory workers and $9 for laundry and dye workers.

**Bell Brief on Flat Rate Contracts at Washington, D. C.**

The Chesapeake & Potomac Telephone Co. has filed answer in the supreme court of the District of Columbia to the injunction proceedings brought by Jesse L. Heiskell for himself and his associates in the Telephone Subscribers' Association to prevent the cancellation of the company's flat rate contracts for telephone service to business houses. By consent of the counsel the hearing on the rule issued against the company has been deferred until September.

The company's answer, made by its vice-president, M. H. Buehler, reviews the whole subject of flat rate contracts in Washington, D. C. It is admitted that the provisions of the act of April 27, 1904, with reference to certain rates to be charged for telephone service in the District of Columbia are correctly stated in the bill of complaint but it is

declared that the act of Congress attempted to fix rates only for telephone service furnished the District of Columbia and for private residences and did not attempt to fix business rates. The latter, therefore, remained subject to contract.

It is declared that these contracts, although entered into prior to the passage of the law of March 4, 1913, are not now in effect for the reason that they were legally and lawfully terminated on June 1, 1914, by due notice given on May 18, 1914. It is further declared that the rates intended by the act of March 4, 1913, to remain in full force and effect until changed by the Public Utilities Commission were the regular common and standard rates of the company and not these exceptional and discriminatory flat rates. The latter have been subjected to a gradual process of elimination until there were on March 1, 1914 only 188 of such flat rate contracts covering service to only 312 stations, whereas there were on that date 6,900 contracts at the regular standard measured or message rates covering service to approximately 21,773 stations.

While the defendant admits that it has never made application to the commission in writing to change the rates in force at the time of the passage of the act, it avers that on April 3, 1913, it fully explained to the commission the then existing status as to the obsolete flat rate contracts held by the plaintiffs and a few others for business service, and omitted these rates from its schedule of regular rates filed with the commission.

**New Member of Maryland Commission.**

Judge W. Laird Henry, formerly of the Court of Appeals of Maryland, has been appointed a member of the Maryland Public Service Commission to succeed Philip D. Laird, whose term expired the last of July. Judge Henry is a Democrat. The retiring commissioner was chairman of the board. Commissioner Albert G. Towers has been selected as chairman.

**Valuation Plans of New York Commission.**

Following weeks of careful work on the part of William McClellan, special engineer, and Daniel V. Murphy, special counsel to the New York Public Service Commission, in the investigation of the New York Telephone Company's metropolitan rates, the commission definitely announced its program of procedure in this important matter.

Hearings will be resumed on September 22, in the New York City offices of the commission, at which time the telephone company has been notified that it must be prepared to proceed with the presentation of its case. The commission has refused to assent to the plan of the New York Telephone Co. which involved a minute and detailed inventory of practically all of the company's property in three states, and through a letter from Seymour Van Santvoord, chairman, has warned the company that it will not countenance delay which will put a final decision of the matter beyond February 1, 1915. If necessary, the commission will hold continuous sessions in this matter after September 22.

This step was determined upon only after a careful analysis of the company's plan by Messrs. McClellan and Murphy. As at first presented the plan appeared to have much merit, but it has finally been determined by the commission that rather than work down to the New York City proposition from the wider scope suggested by the company, the investigation will start with New York City alone, and will only involve those parts of the company's business outside the city which the actual investigation reveals from time to time as necessary for consideration in arriving at an equitable adjustment of the New York City rates, which are the specific matters complained of before the commission.

Speaking of the plan of the New York Telephone Co., Seymour Van Santvoord, chairman of the commission, said:

According to the telephone company's plan it would be approximately January 1, 1916, before we might expect it to complete its evidence in this case, and without guarantee even as to that date. Thus a decision might not become possible before 1917. The plan involves such an elaborate inquiry into unit costs, such an extended investigation of the accounts of the company from the very beginning of the telephone business, and, on the whole, is so complex and extensive as to make the outcome very uncertain in point of time.

Representatives of the telephone company have from time to time volunteered to co-operate with the commission in every proper way to facilitate the progress of this work, and the commission will accept these offers so far as they will facilitate progress, with full confidence in the good faith in which they have been tendered.

The state civil service commission of New York has approved the appointment of William McClellan as engineer for the New York Public Service Commission in the investigation of the New York Telephone Co. preparatory to its appraisal. Mr. McClellan will, it is said, draw a salary of $1,000 a month.

**Indiana Commission's Demand for Merger in Indianapolis.**

The Indiana Public Service Commission recently sent letters to the Central Union Telephone Co. and the Indianapolis Telephone Co., following up its request of last December for a consolidation of the plants of the two companies or a physical connection between them. The letter from the commission to the Central Union Telephone Co. follows:

This commission begs to direct attention to its letter of December 12, 1913, bearing on the telephone situation in the city of Indianapolis, especially to that feature of the letter contained in the last paragraph hereinafter quoted:

"Public convenience and necessity demand a single and complete service, which is only possible by a consolidation between the Central Union Telephone Co. and the Indianapolis Telephone Co. for both local and long distance service. This, then, should be necessarily worked out if there is to be a readjustment in rates of either company.

"It is the desire of this commission that you immediately undertake the solution of this problem, and as soon as possible submit to the commission a basis for its consideration on which the proper solution can be brought about which will be fair to the public and companies as well.

"Public sentiment as evidenced through the press and by petition leaves no doubt in the minds of this commission that a large majority of the telephone users in the city of Indianapolis are dissatisfied with the present dual service condition and desire instead a single or unified service, which will bring about a complete service without the necessity of incurring the expense and added nuisance of two telephones."

Your company has as far as this commission knows taken no steps (as suggested in the paragraphs above quoted) in the direction of assisting or lending co-operation toward bringing about the condition which the public demands. The commission therefore in this way begs to again call your attention to the matter in the hope that you will realize that the interest of the public as well as your company can be better conserved by lending your assistance to this commission in its attempt to bring about better telephone conditions in the city of Indianapolis.

You are hereby directed to submit to this commission at the earliest possible date a detailed physical valuation of your Indianapolis local exchange property.

The letter to the Indianapolis Telephone Co. follows:

This commission is thoroughly convinced that the telephone using public in Indianapolis, Ind., as has been expressed through the press and by petition, is dissatisfied with the present dual telephone service conditions. No

doubt can be left in the mind of any one on this point.

The commission has theretofore indicated its willingness to both companies, in the interest of the public, to find a solution of this unsatisfactory condition. Up to the present time your company as well as the other telephone company has shown very little willingness to assist in solving this problem in the direction of bringing about that which the public desires, a single telephone service at satisfactory rates. This apparent unwillingness to co-operate with the commission may or may not be prompted by selfish motives, but you may understand that the interest of the telephone using public and its protest against the present condition will receive a listening ear from this body.

It is desired, therefore, that at the earliest possible date you submit to this commission a physical valuation of your Indianapolis local exchange property, and we beg to again ask your further and complete co-operation that we may exhaust all reasonable means in an effort to bring about a single and more satisfactory telephone condition for the telephone using public in the city of Indianapolis.

Many months ago the Central Union Telephone Co. petitioned the commission to allow a rate revision in Indianapolis and a change from the present "flat rate" to the "measured service" system of rates. This petition was not acted on. Members of the commission have now, it is stated, expressed the belief that the "measured service" system or rates for telephones is the most scientific method of handling the telephone rate question.

## Summary of State Commission Hearings and Rulings.

CALIFORNIA.

September 8: Hearing to be held at Bakersfield, Cal., in case against the Pacific Telephone & Telegraph Co.

ILLINOIS.

July 29: Decision in the case of the Macon County Telephone Co. against the Bethany Mutual Telephone Co. to prevent the latter from establishing a new telephone system. The commission held that a certificate of convenience and necessity would not be granted to defendant unless it could be shown that the establishment of the new service would benefit the community. The commission held that if the existing company's service is inadequate the proper remedy is through an appeal to the commission and not through the establishment of a new company.

KANSAS.

July 7; docket 837: Order granting application of George M. Dickson, proprietor of the Kimeo Telephone System, for permission to change his rule for the collection of rentals to provide for the payment of $12 per annum per telephone in advance, payable quarterly and $15 per telephone per annum, if not paid in advance, payable quarterly.

July 7; docket 853: Order consenting that the telephone exchange and property used in connection therewith of the Ranchman's Telephone Co., at Medicine Lodge, Kan., be sold to the Arkansas Valley Telephone Co., of Great Bend, Kan.

July 10; docket 832: Order in the matter of the complaint of the Mutual Consolidated Rural Telephone Lines, of Cedar Vale, Kan., against the Missouri & Kansas Telephone Co., providing that the rates of defendant for switching rural lines and for rental of telephone sets be as follows: Switching fee, rural line, $3 per telephone per annum, with five or more subscribers attached to any one line. Rental for telephone $3 per set per annum. Other matters in the complaint were dismissed without prejudice.

July 13; docket 814: Order granting G. C. Brack, of Otis, Kan., certificate of public convenience and necessity to operate a telephone company in Otis.

July 15; docket 800: Order consenting that John Groh, of Leonardsville, Kan., sell his telephone property in that city to the Leonardsville Farmers Mutual Telephone Co., of Leonardsville.

July 15; docket 867: Order granting the Leonardsville Farmers Mutual Telephone Co., of Leonardsville, Kan., a certificate of convenience and necessity to engage in the telephone business and to issue $1,500 of common stock in $10 shares.

July 17; docket 874: Order consenting that E. J. Nunemaker sell his telephone property at Langdon, Kan., to P. D. Krebbiel.

July 23; docket 742: Order dismissing without prejudice application of the Emporia Telephone Co., of Emporia, Kan., for permission to change its rate for four-party selective service.

July 24; docket 732: Order dismissing complaint of W. M. Garrison vs. the United Telephone Co., of Salina, Kan., because of an adjustment having been reached by the parties.

MICHIGAN.

July 31: Honor Telephone Co. authorized to organize and sell $1,000 of stock.

MISSOURI.

July 23: Application filed by Farmers & Merchants Telephone Co., of Monroe City, Mo., to require the Chicago, Burlington & Quincy Railroad Co. to install a telephone in its depot.

July 28: Granted application of Farmers & Merchants Telephone Co., of California, Mo., for physical connection with Bell long distance lines.

September 9: Hearing at Jefferson City, Mo., at which officials of the Southwestern Telegraph & Telephone Co. will have opportunity to interrogate the commission's experts as to their valuation of the St. Louis exchange of the company.

NEW HAMPSHIRE.

September 8: Investigation at Concord to determine whether the New England Telephone & Telegraph Co. and various of its subsidiaries are complying with the provisions of chapter 141 of the laws of 1909, which statutes provide that persons residing within 500 feet of any telephone company shall be entitled to service for three months or more at the regular rate per month for yearly service plus 15 per cent. and the actual cost of installation. Complaints have come to the commission from several parts of the state to the effect that the New England companies, by insisting upon the performances of onerous conditions and by making excessive installation charges, have made this statute practically unworkable.

NEW YORK.

July 31: Hearing held at Montgomery on the complaint of farmers of the district against the service and rates of the New York Telephone Co. Commissioner Decker directed both sides to file briefs within 20 days.

September 22: Hearing to be held in New York respecting the metropolitan rates and appraisal of the property of the New York Telephone Co.

OHIO.

September 16: Postponed hearing at the request of the Central Union Telephone Co. on the company's protest on the valuation of its Lancaster property as fixed by the commission. This case arose out of the complaint of the city of Lancaster against the increased business rates established by the telephone company, effective on July 1.

WISCONSIN.

August 6: Authority to increase its rates from $1 to $1.25 for two-party line service and from $1.25 to $1.50 for single party, granted to the Cascade, Wis., Telephone Co.

Decision in the case involving the complaint of the residents of Fall River, Wis., as to the service of the Fall River Telephone Co. and the charge that since the commission ordered a physical connection between the local company and the Wisconsin Telephone Co.'s lines running to Columbus, the latter has withdrawn direct connection between Fall River residents and its Columbus exchange and is at present giving inadequate service. The complainants asked that the Wisconsin Telephone Co. extend its lines into the village. The commission finds that the legislative intent is against duplication of existing equipments, and, even if such were not the case, that it is without jurisdiction to order the proposed extension. The complaint as to local service is also dismissed, it appearing that such service has been improved to the satisfaction of all parties to the proceedings.

Order authorizing the Lynn Telephone Co. to issue $3,750 of stock. The issue is to cover the value of the company's existing property, it appearing that this is worth the authorized issue, although at present only capitalized at $1,500. The commission's order provides for the transfer of one $25 share for each $10 share of the present stock.

Order authorizing the Westby Telephone Co. to issue $6,050 of stock. The proceeds are to be used in purchasing real estate and constructing a telephone exchange and office building.

Decision No. U-306: Granting Ettrick Telephone Co., of Ettrick, Wis., authority to increase rates.

Decision No. U-307: Order approving rates and rules proposed by Badger State Telephone Co., for its exchanges at Neillsville and Granton with certain exceptions and modifications.

No. U-308: Order in the case of the Curtiss & Withee Telephone Co. vs. the Owen Telephone Co. fixing terms for physical connection restored between the companies.

No. U-309: Order authorizing Ripon United Telephone Co., of Ripon, Wis., to discontinue certain message and flat rate charges and to put into effect, upon completion of improvement to be made, a schedule of rates determined by the commission.

### The Telephone Merger at Waco, Texas.

When the plans now proposed are carried to completion, says a Waco, Texas, correspondent of TELEPHONY, Waco will have the most complete telephone system in the south. While there is no announcement to that effect, it appears that the consolidation of the two telephone systems in Waco, the Bell company surrendering its property by sale to the Independents, will be the beginning of the end of the dual system in telephone service. The fight in Texas has waged for 15 years between the Bell company, represented in this state by the Southwestern Telegraph & Telephone Co., and the Independents.

One of the strongest contenders on the part of the Independents has been J. B. Earle, a native of Waco. He began in a modest way in this city, but he had a foresight that other Independent owners did not have—he linked the town and the country together. While the Southwestern was fighting for vantage ground among city subscribers, Earle went out into the country, formed relations with all the rural lines, agreed to let them come through his exchange in Waco, and built other rural lines, until he secured the combined interest of the country folks and the town people, and his list of patrons began to grow. It became stronger every year and for years he has had the larger list of patrons.

At no point in the state does the Southwestern company extend free service between country people and town people, but this proved a winner for Earle and his Independent holdings in Waco became a formidable competitor for the Bell company. Within the last few years Earle has taken into association with him Ben C. Hyde, of Kansas City, and together they have acquired long distance lines which cover a large portion of Central, South and East Texas, with exchanges in Austin, San Antonio, Beaumont, Houston, Port Arthur, Nacogdoches and other places.

The proposal for consolidation in Waco was originated by the McLennan County Medical Society. At a meeting of the physicians they passed resolutions protesting against the dual system, charging that it was a nuisance, that it required them to pay a double tax for telephone service and that every telephone subscriber ought to have connection with every other subscriber, arguing emphatically that the telephone is a natural monopoly if it gives the proper service.

The public did not take the doctors seriously at first. No one believed the Bell company would part with its exchange in Waco to its Independent rival, and no one who knew the interests Mr. Earle had in the telephone business, believed he would agree to sell. But the physicians took it before the city commission and the city commission invited the telephone people to meet in a conference. At the conference J. B. Earle, as president of the Brazos Valley Telegraph & Telephone Co., appeared for his Independent holdings and J. E. Farnsworth, vice-president of the Southwestern Telegraph & Telephone Co., appeared for the Bell interests. An agreement was reached by which the Bell people proposed to sell to the Independent company their outside construction, underground and overhead, at its present value, the Bell company to retain its instruments, its switchboard, and movable property which could be used in other cities. The Bell company, however, made the following requirements on the Independent company as to Waco facilities:

1. The erection of a new telephone building, modern in every respect, five or seven stories high, of fireproof construction, and of such size as will house the combined exchanges, making provision in the building for the long distance exchange of the Bell company as well as for the Independent toll lines. Such building to cost about $75,000.

2. The placing within this building of new switchboards and the necessary central office apparatus at a cost of from $75,000 to $100,000. These to be modern, up-to-date style.

3. The expenditure of not less than $100,000 in revamping and extending the present outside construction.

Mr. Farnsworth stated that he will require the Independent people to operate the long distance service of the Bell company to the satisfaction of the patrons of the company, every subscriber to the local exchange to have long distance service.

Vice-President Farnsworth for the Bell company said that in his opinion there would be a stop put to the dual telephone systems in every part of the country.

"We agree to part with our Waco exchange reluctantly," said Mr. Farnsworth, "but I have always opposed two systems in a town. It is a double tax and is a nuisance. I am convinced that the opposition to two systems will never down until there is an understanding by the people of the money that is wasted by the two systems. We are willing to make the sacrifice in Waco in order to further along this movement."

The matter was discussed at length in public meetings and finally was adjusted by a vote in the city commission authorizing the merger of the two companies and authorizing the succeeding company to advance the rates from $4 per month to $5 per month on business telephones and from $2 per month to $2.25 per month on residence telephones.

Plans are now making to carry the consolidation to completion. It means big telephone improvements in Waco.

After this action was taken by the city council, further consideration was given by the officials of the telephone company to the question of rates with the result that the company voluntarily announced that rates for residence service would remain at $2 instead of being advanced to $2.25. In a statement Mr. Earle said:

"It will be at least January 1, 1916, before the consolidated companies can begin operations. On the first of January, 1917, we will submit an accounting of what our properties are worth, after a year's trial. In the event it is found that the rate of $2 per month for residence telephones does not yield the returns that must be had on our investment, we have an abiding faith in the officials of the city of Waco, whoever they may be, and the citizenship of Waco, that they will do the right thing."

### British Pole Business.

The post office pole supplies in Great Britain are covered by an annual contract calling for the delivery of some 65,000 poles. Additional contracts were recently placed for an additional 100,000 at which time the postmaster general, Mr. Hobhouse, is said to have expressed regrets that British forestry had no share in contributing to this supply. The annual yield from British sources has been a few hundreds only. The post office authorities will spare no effort to ensure a larger measure of this business going to British growers. In the opinion of the department, red fir or Scotch pine, and larch, are most suitable for the services required. Both are common in the United Kingdom and may be readily grown. The specifications under which they are purchased include 21 lengths ranging from 16 to 85 ft., and provide for a minimum diameter at top of pole from 5-in., in the case of the lightest, to 8-in. in the case of the heaviest.

### Earnings of Central District Company.

The Central District Telephone Co., of Pittsburgh, Pa., reports for the six months ended June 30, gross earnings of $3,256,230, expenses of $2,496,172, net earnings, $760,058, and interest and dividends of $752,192, leaving undivided profits of $7,866.

# The Value of Quality

## By ELBERT HUBBARD

Quality in a commodity compares with efficiency in a man. And the quality of quality is determined by its survival value. And survival value is prescience harvested; foreknowledge utilized with a view to future contingences. So quality is largely a matter of mind—a correlative to man's nature—a moral trait.

Quality goods or service is but the reflex of quality in the Creator. Quality is the cream of the milk of human kindness—the essence of human service. Hence it is that we have so many advertised brands of quality—good, bad and indifferent, with here and there a superior commodity, service or individual.

Here we get another phase of quality—distinctiveness of character. The distinctive man is a man of quality. Whether he be good, bad, or fair, is a matter of education, for the mind grows by what it feeds upon, and morals are the product of associations.

The greatest mistake we make is to neglect our latent talents until it is too late to cash them in. That is the crux of the whole question of quality value. To be worth anything it must produce specific results. That is the hallmark of superior quality. And this superior quality can only be attained by specailization. It is only when a proposition is narrowed down to definable issues that it can be handled with any degree of efficiency and success.

You must know what you are selling, what you are doing, where you are going. To arrive, you must have a destination. The man that scores gets to the home plate—that is his objective, and he is always headed for it. Don't die on third! Specialize! give "reasons why." Specialization transforms nescience into prescience. It makes for mastery of detail. It exchanges superficial acquaintance for thorough knowledge and efficiency.

Special knowledge involves persistence, stick-to-it-iveness, concentration, and direction. It also requires the exercise of your individual thinking apparatus and the use of your eyes, ears and muscles; also the adoption of a right mental attitude. But unless you apply your ideas, what's the use of specialization anyway?

The value of quality can only be judged by its practical application and utility. That only is sacred which serves; and a man who lives on his roof is too close to the clouds to be of any real value. This is where we may profit from following the methods of those great educators, Froebel, Wm. Morris and Mme. Montessorri. Head, hand and heart must be the combination. We must apply our ideas—materialize them—work them into things beautiful, tangible and useful.

Constant application, not only to the subject, service or commodity, but of it, is necessary in order to appraise its value. It was this application of special knowledge that enabled Goethals to accomplish his world-thrilling work in connection with the Panama Canal.

Marshall Field was a service specialist. The little red schoolhouse gave him academic instruction, but the lesson of service he learned by doing chores on his father's farm. By his dogged determination, persistence and application to work—his keen psychology and prescience—he created the biggest mercantile establishment in the world.

Washington exhibited to a marked degree these superior qualities of persistence and application. His research and insight inspired him with a fixed purpose, the establishment of an American republic.

History's page is full of men and women whose specialized knowledge has given value to quality. Franklin, Edison, Bell, A. T. Stewart, Watt, Stephenson, Fulton, Westinghouse, Mme. Curie—these and scores of others have made indelible impress upon our thought and life. You cannot look out of any window in Christendom, without seeing evidence of the valuable qualities of these people. They have placed on record examples of their ingenuity for our use and emulation.

The career of every clerk, mechanic, engineer, merchant, craftsman or business man is influenced by the survival value of their qualities. And quality is not a monopoly. It is within the reach of everyone.

The person who reads on a certain subject for an hour a day for five years, will be quoted as an authority on it. He who associates with men who think, will become a thinker. To hold converse with an educated person is to put yourself in the line of evolution.

To materialize your ideals by working in clay, wood, stone, iron or brass—to push the publicity pencil to a purpose—to give expression to your thoughts, orally or on paper, is a sign that you are endeavoring to increase your quality value. Specific plan, definite direction, constant application, persistent effort, these spell efficiency, success, value.

Special knowledge will give the boost to your career. It will cause your bank balance to bulge and your pay envelope to become obese. And I know of no greater source of power, of no more helpful means that will bring about that consummation, or give greater value to quality, than the trade paper.

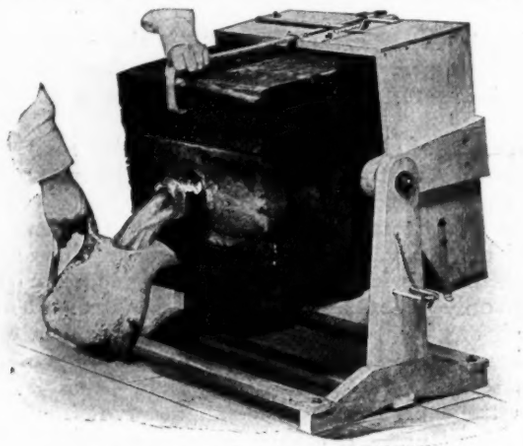
(Copyright, 1914, Kovnat Adv. Service.)

# From Factory and Salesroom

Convention: Indiana Independent Telephone Association, Indianapolis, Sept. 16, 17

### The Union Carboy Inclinator.

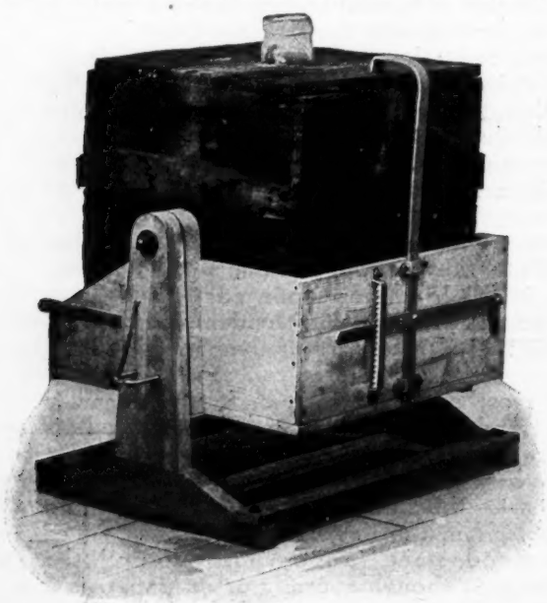
Telephone men in common battery exchanges, and all who are called upon to draw acid for the renewal of storage batteries, will at once appreciate the utility of the Union carboy inclinator shown in the accompanying



Inclinator in Operation by One Man.

illustrations. Even where two men are available to handle a heavy carboy of acid it is extremely difficult to draw the liquid without spilling it, causing burns or spoiling shoes and clothes, while broken carboys mean flooded floors and resultant damage of a possibly serious nature. With the inclinator shown, the carboy can be handled readily by one man and a supply of acid secured, or the carboy completely drained, with ease.

The base, uprights and hanger arms of the inclinator are built of clear maple, while the box is of clear spruce



Back of Inclinator Showing Adjustable Clamp.

and supported with ¾-in. hanger bolts. All metal parts are painted. The front part of the box, which is not shown in the illustrations, is furnished with a drop gate, to permit the carboy to be lifted into place. When down, this gate rests firmly on the base, thus supporting the hanger box against the impact of the heavy carboy when it is put in the box. The safety key through the upright prevents any backward tilt.

With the drop-gate in position and firmly held with slotted steel spring fasteners, the face of the carboy bears against the studded surface of the drop-gate. The adjustable steel clamp to hold the carboy at the back, is made with broadened head drawn to a dull edge to insure good contact. The clamp rod is adjustable, having a vertical range of eight inches and the curved head has a reach of five inches, thus making allowance for a secure hold on any size of carboy. The clamp rod is operated readily by means of a lever bar, with link attachment to the box, which admits of any desired purchase. When forced down, the bar is retained by means of a spur which, as shown, engages a saw-tooth plate, thus holding the clamp rod, it is said, absolutely secure. Any rocking of the box holding the carboy is prevented by the safety key, which is withdrawn when it is desired to pour acid from the carboy. The inclinator is shipped knocked down, but all parts bolt together and fit in such a manner that the device is easily assembled. These inclinators are manufactured by Horace M. McCord & Co., 433 Lumber Exchange Building, Minneapolis, Minn.

### Head of Stromberg-Carlson Sales and Engineering.

Eugene A. Reinke, sales manager and chief engineer in charge of the reorganized Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., has practically grown up

E. A. Reinke.

in the telephone manufacturing business and has been with the Stromberg-Carlson company for the past 13 years. He was born in Chicago, January 11, 1880, and was educated in the public schools and manual training school of that city. In 1899 he entered the employ of the Western Electric Co., as draftsman and was later in the engineering department. In the following year he went with the Kellogg Switchboard & Supply Co., of Chicago. In 1901 he became associated with the Stromberg company in the drafting and engineering departments from which he was transferred to the installation department. When the factory was moved to Rochester, N. Y., Mr. Reinke entered the sales department and was located at the Chicago branch. In 1905 he was appointed sales engineer of the company at Rochester in which position he continued until 1912, when he was made chief engineer. He is a well known figure at the national and state Independent telephone association conventions.

### "Greatest Dread" and the "Universal."

By Edward Harrison.

Once on a village street, I met the manager and owner of the town exchange—about 250 lines. The man wore a troubled far-away look, and upon my questioning, he said: "I was just worrying, thinking of the time when we would have to cut over to the common battery."

As the town had been hibernating for some 15 years with the likelihood of another decade passing before there would be 100 additional subscribers, not to mention farmers' lines outside, I said: "Cheer up, brother, it will be some time before that is necessary."

"Yes," he replied, "but, gosh, how I do dread it!"

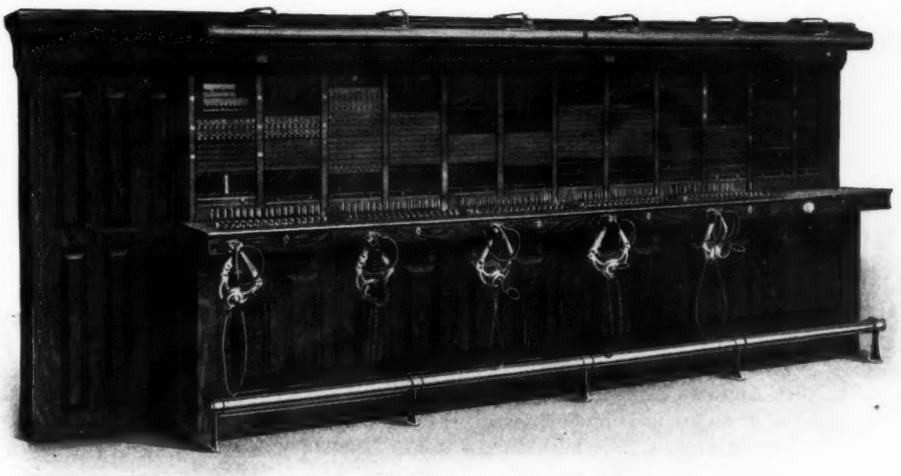
That man had sometime or other worked for companies where the change had been made with all its attendant troubles. He had expressed the sentiment of many telephone men. "But," I argued, "you don't have to have a cut over of that kind."

An incredulous look passed over his face. "How can that possibly be?"

"Very easy now," I replied. "I know, because we have Kellogg Universal telephones on our line and connect them with a Universal switchboard."

"Universal sounds good, but what does it mean?"

"It means that you buy a complete Kellogg standard battery multiple switchboard and one type of telephone only, small compact wall set or regular desk telephone equipment.



Universal Type Switchboard at Minneapolis, Kans.

The 700-Line Kellogg Universal Switchboard at Clinton, Mo.

"This is a magneto exchange equipment for giving the best service of its type. Then, as you desire and your customers wish, you can give them common battery telephones, one at a time, at an increased rate for the improved service, and these subscribers will have the equal of any common battery telephone switching plant in the country. Furthermore, the supervision is such that each kind of subscriber receives the same prompt and efficient attention.

"As I stated, the size of the Kellogg Universal telephone set has been reduced in all dimensions, the transmitter arm being shortened one-half, and the set is furnished without shelf or arm if desired. In any case, the instrument is better adapted for hallways, narrow closets, etc. The only entirely different piece of apparatus in the telephone is the hook switch, shortened to allow the difference in width of set. However, this switch has not been just "shortened." It is an altogether new switch. There is nothing like it on the market and I think there is no comparison between the old types of short lever switches and the new Kellogg. Furthermore, it is not an experiment, but has been thoroughly tried and proven reliable.

"The generator, ringer, receiver, induction coil, and arrester in the new set are exactly the same as in the regular compact Kellogg telephones. The transmitter of the new Universal is of the high resistance type, the same as has been furnished on 3-bar "convertible" instruments.

"Years of experience have shown this transmitter gives maximum talking efficiency with two dry cells. These transmitters can, of course, be placed on any Kellogg telephone without change and old transmitters can be installed on new sets. Reduction of battery consumption, and increased talking efficiency are improvements apreciated by every telephone man. Experience shows Kellogg Universal sets accomplish both of these results.

"The best thing to do, if you are interested in new equipment, is to send to the Kellogg company for its bulletins on Universal telephones and switchboards."

Referring to the financial saving of the "Universal

Switchboard," the plight of the village manager reminds us of H. N. Faris' oft-repeated wise old German saying that "The barn will build the house but the house won't build the barn."

This was, doubtless, first quoted by some thrifty farmer as the reason why his family of ten souls occupied a 16x20 foot shanty while his cattle enjoyed the luxury of a monstrous and well-built barn. It is a safe venture that within the next few years this same thrifty German built a new house in keeping with the barn.

I never fail to think of this saying when some telephone manager, crippling along and giving poor service at a low rate in a large magneto plant, tells me that he can't consider a new board until the company is able to put up a modern telephone building.

In such cases, a new equipment would almost invariably build the building. But the building will never build better service or raise a rate, and continuing to cripple along is little short of suicidal.

### Business Appears Good for Stromberg-Carlson.

The general switchboard business of the Stromberg-Carlson Telephone Mfg. Co. is better than it has been for some time and the sales, so far this month, are much ahead of August of last year. The following is a list of switchboards, the orders for which have been received within the past two weeks:

The Salo Co-operative Telephone Association, Lawler, Minn., one A-5629 magneto switchboard; Petroleum Telephone Co., Oil City, Pa., 100 additional line equipments; Louisville Home Telephone Co., Louisville, Ky., 240 additional line equipments; Citizens Independent Telephone Co., Terre Haute, Ind., one special cordless toll desk; Union City Telephone Co., Union City, Ind., complete central office equipment; Home Telephone & Telegraph Co., Ft. Wayne, Ind., one A-5597 P. B. X. switchboard; Tri-State Telephone & Telegraph Co., Merriam Park, St. Paul, Minn., one additional section switchboard framework, and equipment for 100 lines; Kilduff Mutual Telephone Exchange Co., Kilduff, Iowa, one A-5629 magneto switchboard; Hayfield Telephone Co., Hayfield, Minn., one A-5629 magneto switchboard; Paducah Home Telephone & Telegraph Co., Paducah, Ky., one A-5597 P. B. X. switchboard.

### Automatic Installation in Jacksonville, Fla.

Reports from Jacksonville, Fla., indicate that rapid progress is being made in the installation of the automatic system in that city by the Home Telephone Co. It is expected to have the system in service by September.

### Ten Years in Telephony.

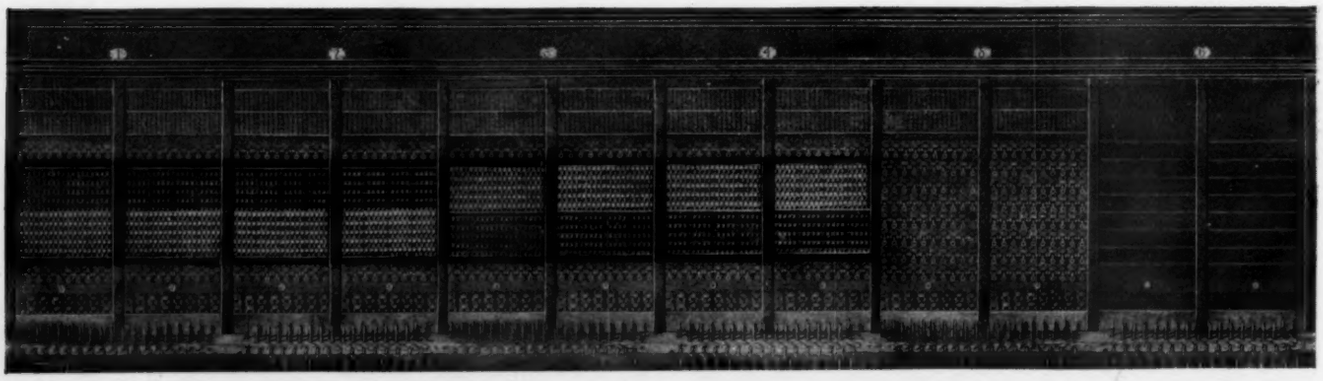
A man can begin as an assistant in the telephone business and at the end of ten years can still be shooting trouble. Also a man, if he has determination and enthusiasm can start in as office boy and, by "getting under the skin" of the game, at the end of ten years can be operating an exchange. And a great many are operating exchanges with that amount of experience.

B. A. Parsons left high school ten years ago and today has at his command the practical experience of almost every office in a telephone plant. He has held, successfully, the most important positions, but it is not always the important positions that count for the making of a telephone man's success. The unimportant positions, especially the beginning unimportant positions, are the vital factors. It is not easy to get Mr. Parsons to talk about himself, but the simple record of the positions that he has held in this comparatively brief time, shows that he has the determination and enthusiasm of a successful telephone man.

B. A. Parsons.

Mr. Parsons is a native of Valley City, N. D., and is now state representative in North and South Dakota, for the Kellogg Switchboard & Supply Co., the appointment having been made last month. Upon leaving school, Parsons went out with a trouble shooter for the Valley City telephone exchange. He learned all about trouble shooting, not just the superficial things but all the little details that lie behind the practical knowledge which tells a man when a telephone is not working and "the reasons why." Valley City, though not a metropolis, is a leader is the Northwest, and was one of the first to install exclusively Kellogg common battery equipment.

From trouble shooter Mr. Parsons went to line construction work. Subsequently he held several office positions, including that of collector, and after two years he became wire chief. Two years later he resigned to take up the study of telephone engineering, at Des Moines, Iowa. At the completion of his course, he went to Cooperstown, as general manager for the Griggs County Telephone Co. Leaving Cooperstown, after several years of successful service, Mr. Parsons accepted a position in the telephone department of the Western Utilities Corporation. This position he later resigned to become traveling salesman for the St. Paul Electric Co., of St. Paul, Minnesota.



Jack and Signal Space Comparisons of Ordinary Magneto Multiple Board and New Kellogg Universal Board.

"There is a phase used in Kellogg advertising," said Mr. Parsons recently, "that appeals to me, in the light of my experience as a telephone man. I have had experience with many different kinds of appartus and the words 'Use is the Test', which appear in all Kellogg advertising, never fail to remind me of the fact that I have been educated to Kellogg apparatus superiority, solely, because I have used all kinds on the market. I look forward to a successful year in the telephone business, and I have the utmost confidence in boosting Kellogg."

### Guy A. Joy With Garford Company.

Guy A. Joy, of Chicago, Ill., has joined the sales force of the Garford Mfg. Co., Elyria, Ohio. Mr. Joy has had a number of years' experience in telephone engineering and in the sales departments of telephone manufacturing companies. He has traveled extensively throughout the United States and in many foreign countries and is associate author of the book entitled "Toll Telephone Practice."

G. A. Joy.

Mr. Joy was born at Sabetha, Kan., in March, 1876, and was raised on a farm in Johnson county. He was educated in the Nebraska State Normal School and Nebraska State University, receiving the degree of B. Sc. from the former institution. He has been engaged in connection with the manufacture and sale of telephone apparatus since 1900. His association with the Garford Mfg. Co. is one of the many recent steps taken by that company to strengthen its forces and to take an increasingly active part in the manufacture and sale of Independent telephone apparatus.

### James Whitcomb Riley at Jovian Banquet.

James Whitcomb Riley, the Hoosier poet, broke a time honored rule not to speak in public when he attended a recent Jovian luncheon at Indianapolis as guest. The rule is one that has not been broken in any degree for five years until the presence of the good fellows of the Indianapolis Jovian society warmed him to make a request that he be allowed to talk.

The poet was seated so that he would be next to Gov. Samuel Ralston. Riley reached his seat first and when the Governor entered, he greeted him:

"Hello, Sam."

"Hello, Jim."

And they clasped hands.

Riley's talk was characteristic, being humorous, homely, and complimentary to the Jovians for their spirit of boost. Riley was made an honorary member and has promised to write a poem on "How It Feels to Be a Jovian."

### Paragraphs.

American Hoist & Derrick Co., St. Paul, Minn., in its June-July issue of The Crosby Clipper presents an interesting account of the manner in which brush mattresses are used in protecting the banks and river bottom of the lower Mississippi River from the erosion and shifting of channels which is constantly occurring to the detriment of navigation. In making these brush mattresses Crosby Clips are used and have proved so effective that large orders for the devices are placed when work of this kind is undertaken. The severe government test which Crosby Clips undergo and the method of their manufacture are described.

The Dielectric Mfg. Co., of St. Louis, Mo., has published a carefully prepared booklet entitled "Data on Dependable Insulation," which contains a considerable number of insulation curves and information regarding the company's impregnating compounds and insulating varnishes, machinery finishes, protective paint for metal surfaces, sealing compounds, etc. A portion of the booklet is devoted to the company's various forms of mica insulating plates, cloth and paper; and soldering salts, fluids and pastes, including "Soldux," a self-fluxing paste solder.

### Business Is Better, Says A. B. Conklin.

A reassuring note as to business conditions comes from A. B. Conklin, vice-president and general manager of the Atlanta Telephone & Telegraph Co., of Atlanta, Ga., in a statement published on the front cover of the August number of The Atlanta Phone Register, entitled "Business is better." This statement follows:

Last month we said: "Business is good." This month we feel deeply gratified over our ability to say: "Business is better." In other words, evidences of constant, constructive growth continue. That is true with us and we are glad to note that reports now indicate substantial growth along practically all lines.

Our traffic report for July shows a daily average of 69,279 calls as against 61,660 for July, 1913, an increase of nearly 8,000 calls per day. It shows, too, that during the first six months of 1914, ending June 30, the average number of calls increased approximately 4,000 per day as compared with the same period of 1913. Here is substantial growth for the year as well as for the month, and from these figures it will be readily apparent why we are able to say: "Business is better."

Again, our reports show that in June, 1914, we secured more new contracts than in the same month of the preceding year—another evidence of better business. All fears as to any possible radical action on the part of President or Congress seem to have been entirely dissipated, and there is a growing feeling that conservative reforms will strengthen business confidence.

Equally important is the splendid crop situation in Georgia and throughout the South. We had a good crop year in 1913, and everything points to a better and bigger one in 1914. Two good crop years in succession will inevitably lay a business foundation of the most substantial kind; and we believe that fall and winter indications were never better than they are right now.

We propose to keep the pace, not only in the matter of business growth, but in improvement of service at every possible point. Our new exchange and extensions will greatly increase our facilities and enable us still further to improve our efficiency.

We are proud of the service we have been able to render our patrons, included among whom are practically all the large department stores, markets, railroads, etc., of the city, and we are gratified over the commendation that has come to us. It encourages us to strive for even better results in their service.

### Underground Cables Without Conduits at Monmouth, Ill.

The Monmouth Telephone Co., of Monmouth, Ill., is trying the plan of laying underground cable without conduit, laying it in the ground at a depth of 18 inches. Tar paper is laid over the cable and over this is laid a three inch covering of concrete.

### New York-Tampa Service.

Reconstruction work which the Peninsular Telephone Co., of Tampa, Fla., is undertaking between Tampa and Lakeland will result, it is stated, in the establishment of long distance telephone service between Tampa and New York City, within three months.

# Legal Cases and Decisions

By A. H. McMillan

### Payment of Dues on Party Lines.

"We are bothered with a few people in the country who claim they have a right to have their telephones connected on party lines without paying switchboard dues, for the reason that they do not talk through the exchange to other lines. They gave us notice not to ring them, but sometimes we ring them in case of emergency, and they never refuse to talk. Most of them own their telephones and have interests in the lines. We have one line where five pay and five do not. We would like to get rid of these dead-beats, and ask if you can tell us how to proceed."

The proper procedure to get rid of these people who decline to pay dues is to adopt a rule that no one who does not pay dues shall have a telephone connected with any of your lines. Then give notice of the existence of that rule to all parties on your line with notice of the day when it will go into effect and that it will be strictly enforced. That procedure will place you in a position rightfully to disconnect the telephones of any persons who do not pay switchboard dues. The fact that parties do not talk through your exchange makes no difference to your right to the dues. It would be well to designate them otherwise than as "switchboard dues."

### Guy Pole as Cause for Accident.

A mutual telephone company placed in the north line of a highway a telephone pole to which was attached a guy wire which extended diagonally into the highway, and four feet and four inches from such pole, was attached to a brace driven in the ground. The highway was 44 feet, and the travelled portion was 30 feet, wide. The space north of the travelled portion in which the wire was anchored, was some six inches higher, and was not smooth but was covered with grass and weeds. The plaintiff was riding in a wagon with her husband, who was driving a span of mules, which had tried to run away at previous times. Meeting an automobile some 20 rods east of the pole and wire, the mule took fright and, going to the right of the travelled way, ran the wagon against the pole or wire, probably the latter, throwing the plaintiff out and against the pole.

The court held that the telephone company was not negligent in locating the pole where it was, and, whether negligent or not in respect to the wire, was not liable for the reason that the wire was not the proximate cause of the injury, or one which might reasonably be expected to cause such injury. Eberhardt vs. Glasco Mutual Telephone Association, 139 Pacific, 416.

### Physical Connection Upheld in Nebraska.

The Supreme Court of Nebraska has sustained the constitutionality of the law giving an appeal from the proceedings of the State Railroad Commission to the Supreme Court, in which decision it holds that the commission has jurisdiction to order physical connections of telephone lines and exchanges. It is held, besides, that when the parties failed to agree, it is the commission's duty to determine and prescribe the terms and conditions of such connection and of the use of the lines so connected, and to apportion the expense of connecting them.

The decision was made in a suit brought by the Hooper Telephone Co. vs. Nebraska Telephone Co. before the state railroad commission to compel an interchange of service. The connection asked was with the Fremont Telephone Co., the stock of which the Nebraska Telephone Co. had purchased. The grounds upon which the constitutionality of the law was based was that it attempted to confer upon the supreme court the jurisdiction other than that established by the constitution of the state. The Nebraska Telephone Co. also contended that the order of the railway commission compelling it to make physical connection with the Hooper company amounts to the taking of its property without compensation, and, as the statute makes no provision for compensation, the state and federal constitutions were both violated.

The contention of the defendant, more fully stated, is that the "result of such a connection is to at once pass to the Hooper company as much dominion and control over the toll lines as the Nebraska company itself possesses, and when service is given over such a connection the Hooper company is in control not only of the toll line, but likewise of its operation. * * * Telephone lines are operated by an electric current, and wherever the line terminates there lies the control of the entire line. But one conversation can pass over a circuit at the same time, and the minute the telephone circuit is connected with the switchboard of the Hooper company the switchboard becomes the end of the circuit, and it lies within the power of the Hooper company to interfere with and control the traffic of the entire circuit all the way between Omaha and Norfolk," and that there is no escape from the conclusion that physical connection with the toll circuit "subjects the property of the Nebraska Telephone Co. to certain risks and dangers against which the Nebraska Telephone Co. cannot guard, because these risks and dangers arise from the fact that the Hooper Telephone Co. has the physical possession of the end of the toll circuit."

The supreme court answered this last contention as follows:

"It appears that physical connections of different telephone lines have been made in many instances without any such direful results. When an individual asks for connection of his private telephone with the toll lines of the company, and such connection is made for him, he has the exclusive use of the toll line of the company for a certain time. There is no doubt that if he complies with the reasonable regulations of the company he is entitled to such use of the line, and that the company could be compelled to furnish such use upon reasonable terms and upon complying with reasonable regulations without any greater use of the company's property or any greater danger of injury thereto than in case such service is furnished to a patron of the company itself."

Hooper Telephone Co. vs. Nebraska Telephone Co., 147 Northwestern, 674.

### Regulation by Commission.

The telephone of a subscriber of the Cass County Home Telephone Co., doing business at Cassopolis, Mich., was disconnected and service discontinued. The subscriber made complaint to the Michigan Railroad Commission, charging the company with discrimination in refusing to give him telephone exchange service and praying the commission to declare as unreasonable certain of the regulations embodied in this contract which the company required him to sign as a condition of renewal of service.

After the decision by the commission, the subscriber took an appeal to the circuit court from the decision of the commission. The court issued an order requiring the telephone company to restore service to the subscriber. It was stated that the order was only temporary in character to preserve the rights of the parties until the commission should have fully passed on the matters in dispute between the company and subscribers. The telephone company refused to comply with the order of the circuit court and was adjudged guilty of contempt of court.

The supreme court of the state held that the company was not guilty of contempt because the order of the circuit court requiring the company to restore the telephone was void, because the subscriber had not submitted to the court a copy of the evidence taken before the commission as required by law. The court also held that the circuit court had no power to issue an order to preserve the *statu quo* pending the suit unless to sustain the action of the commission.—Briggs vs. Cass Circuit Judge, 144 Northwestern, 501.

### Condemning Right of Way.

The laws of Indiana authorized corporations organized to manufacture and sell electricity for heating, lighting and power, to condemn lands to enable them to fill the objects of their organization, for buildings, structures, and lines of poles and wires. This statute was held to authorize the Muncie Electric Light Co. to condemn a right of way for a telephone line for its own use, and as incident to the discharge of its public duties in the operation of its transmission line. Joliff vs. Muncie Electric Light Co., 105 Northeastern, 234.